The Magazine of

STANDARDS

How Bell System Restored Service After Hurricane Damage

December 1954

In Two Parts — Part 1

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Part 2

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MARGINAL NOTES

"Ed" Gushee —

It was a sad blow to the American Standards Association when it lost its president-elect even before he had had an opportunity to take up the reins of his new office (see page 393). When word was received that Edward T. Gushée had died after an illness of three weeks there was a general feeling at ASA headquarters of stunned disbelief. It seemed only yesterday that he had been present at the meetings of the National Conference on Standards. There he had listened with attentive interest, nodding in agreement when a phrase took his fancy, and commenting enthusiastically, "It's fine to see so much interest in standards. This is a good show." His friendly, warm personality, and his genuine interest and enthusiasm for the job he was taking on impressed everyone he met. Even though the ASA member organizations and staff had had no chance to work with him as ASA president, each individual who met him felt the loss of a true friend in the loss of "Ed" Gushée.

Looking Backward — and to the Future —

As 1954 draws to a close and 1955 begins, it is appropriate to wish all the readers of THE MAGAZINE OF STANDARDS a Happy and Prosperous New Year.

During the past year, the magazine has carried forward its program to cover the standardization field as broadly as possible. With the January issue the new title "The Magazine of Standards" was adopted, recognizing a tendency on the part of many to couple the word "standardization" (the former title) with "regimentation." The new title placed emphasis

ASA
Reg. U. S. Pat. Off.

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Opinions expressed by authors in THE MAGAZINE OF STANDARDS *are not necessarily those of the American Standards Association.*

on the practical and active development and use of standards rather than on the theory of standardization.

Following this idea, articles presented during the past year have emphasized people in the standards news, actual experiences of companies and groups in the application of standards, and news about meetings at which standards, both national and international, are developed. Among company programs featured were those of the General Electric Company, Western Electric, Eastman Kodak, Jeffrey Manufacturing, Virginia Electric, and the Bell Telephone System. In addition, Sam Kaidanovsky's valuable series on government standards gave information on standards work of the Commonwealth of Virginia, New York State and City, the General Services Administration, and the City of Chicago.

The year opened with a report of one of the most outstanding standards meetings ever held under ASA auspices — the Fourth National Standardization Conference. A great international meeting — the Golden Jubilee celebration of the International Electrotechnical Commission — followed later in the year as one of the important features during 1954.

Two sad losses, in addition to the one reported this month, broke the year's harmony — the death of the first secretary of ASA, Dr Paul G. Agnew; and the death of ASA's longtime Materials Engineer, Horace M. Lawrence.

This year saw the beginning of the personal opinion columns by Leo B. Moore. These columns are continuing in 1955.

All these features of this year's activities, and many more, are reflected in the Index to Volume 25, published as Part 2 of this issue.

1955's Volume 26 (our January issue) gets off to a good start with a report of the Fifth National Conference on Standards held November 15-17 at the Hotel Roosevelt, New York.

The Front Cover —

This pole-raising act was one of the steps in restoring telephone service to hurricane-destroyed New England communities in the fall of 1954

This Month's Standards Personality

Madhu S. Gokhale, newly elected president of the Standards Engineers Society, claims he can qualify as possibly the only second generation standardizer. His claim is based on the fact that his father, Shankar L. Gokhale, worked as a research physicist for General Electric at Schenectady from 1912 to 1933 and for some time during that period was in charge of GE's standardizing laboratory.

Mr Gokhale (Madhu) is now manager of RCA Mechanical Standards at the RCA Victor Division, Radio Corporation of America, Camden, N. J. He is one of the original organizers of the Standards Engineers Society and has been active in the Philadelphia section as well as in the national organization since it was first started in 1948. He has served as vice-president during the past couple of years.

A graduate of Union College in Schenectady, with a B.S. in Electrical Engineering (1927), Madhu Gokhale worked for a couple of years at General Electric, first on tests and then in the d-c engineering department. He transferred to RCA-Victor in 1930.

His first experience at RCA was on designs of 16-mm projectors, direction finders, and broadcast transmitters. In 1938 he was transferred to the RCA Standardizing Department to work on standards for components and on drafting standards. As a result of this experience he organized the RCA Drafting Committee and the Shop Practices Committee and has been chairman of these committees since 1940. At present he is Drafting Coordinator, and Editor of the RCA Drafting Manual. His work on standardization brought him a promotion to Manager of RCA Mechanical Standards in 1944, the position he now holds. He is also secretary of the RCA Standards Policy Committee.

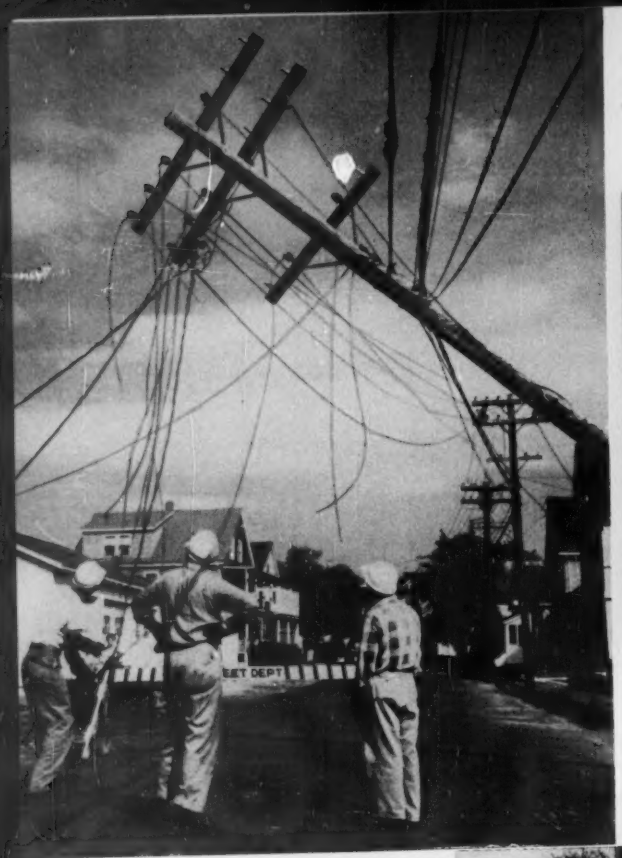
Outside his regular job, Mr Gokhale represents RCA on a number of subcommittees of ASA Sectional Committee Y14 on drawing room standards for sheet metals, plastics, and die castings.

In 1951 and 1952, before he took on the extra responsibility of vice-president of the Standards Engineers Society, he gave seminar lectures on standardization at the Temple University Technical Institute.

Mr Gokhale is married, and has two children — a grown son and a teen-age daughter. In addition to his children, his pride and joy is his '52 Oldsmobile convertible, which he only wishes he could find time to drive. He would have fun with his other hobby, photography, too, if he could fit it into his overcrowded schedule.

FOR YOUR 1955 CALENDAR —

The Sixth National Conference on Standards and Thirty-seventh Annual Meeting of the American Standards Association — Sheraton Park Hotel, Washington, D.C. — October 24-26. Sponsored jointly by the American Standards Association and the National Bureau of Standards.



Hurricanes Carol, Edna, and Hazel *caused widespread damage in Eastern states this year as shown left and below on this page. Telephone lines were especially susceptible (left); however, installation and repair forces using standard equipment and standard methods rolled in from other sections to repair the damage. A cavalcade of telephone repair crews is shown below ready to start its rush trip from Pennsylvania to Massachusetts. With repairmen, parts, and tools, Supervision, too, was part of the force. Because of standards, the line gang from Maryland shown in the picture on the front cover found working on New England telephone plant little different from working on its own.*

Photos courtesy American Telephone & Telegraph Co.

How Bell System Restored Service

After Hurricane Damage

by JOHN H. MITCHELL

The Author — *Mr Mitchell is an engineer in the Operation and Engineering Department of the American Telephone and Telegraph Company, New York, and has a part in helping to develop the uniform methods of engineering, construction, and maintenance he describes here.*

●

THE flexibility and economy afforded by standardization has long been recognized in the utilities industry. This past Fall its value was further demonstrated when, in the space of just seven weeks, three devastating hurricanes raked the northeast section of the country, leaving millions of dollars of damage in their paths. These disasters, coming in rapid fire order, created for the telephone companies, as for all utilities, a monumental task in restoring service to an anxious public. The Bell System, with its large force of men trained in the same techniques on standardized plant, was in a good position to meet this situation. Within two days of each storm's passing a large portion of the services was restored and all service was virtually normal within six days.

The first of the hurricanes, Carol, struck New England on August 31. Some 334,000 Bell System telephones were put out of service in the territories served by the New England, Southern New England, New York, and New Jersey Bell Telephone Companies. Just eleven days later, on September 11, Edna blew her way across virtually the same area, disabling 295,000 telephones. The last of the three, Hazel, struck inland along the coast of the Carolinas on October 15 and proceeded northward through Virginia, Maryland, Pennsylvania, New York, and into Canada. In her wake were 448,000 telephones out of order in the territories served by the Southern Bell Telephone and Telegraph Company, Chesapeake and Potomac Telephone Company, Bell Telephone Company of Pennsylvania, New York Telephone Company, New Jersey Bell Telephone Company, Southern New England Telephone Company, and New England Telephone and Telegraph Company.

Returning such a large number of telephones to service in the shortest possible time, in an economical and efficient manner, requires an accurate picture along with sharp evaluation of over-all damage suffered, so that prompt dispatch of men, materials, and equipment can be made to the locations in need.

In the cases of Carol and Edna, heaviest damage was concentrated in the populated coastal areas of Connecticut, Rhode Island, Massachusetts, New Hampshire, and Maine. For over-all coordination of its restoration activities, the New England Company utilized its restoration control center to receive, by telephone, damage reports as well as manpower and material requirements from the field. In New York City a similar center was established at AT&T Co headquarters. Here, reports received from all the affected companies provided the over-all damage picture. Requirements for men and equipment from the companies were received in terms such as "line gangs" or "splicing crews," units generally uniform throughout the Bell System. Coordinating over-all restoration activity, this center arranged with companies not affected by the storms, but already alerted, to start men and equipment rolling. For Carol, 1,650 Bell System men with 900 vehicles were moved into the New England Area from New York State, New Jersey, Pennsylvania, Maryland, and Washington, D.C. For Edna, 1,950 men with 1,100 vehicles were borrowed, including one entire Plant Division of the Michigan Bell Telephone Company. This unit was loaded on two special trains, much like an Army Division, to carry the entire organization — men, equipment, and supervision — to the assistance of the New England Company.

Standard "body" tools *such as those carried by the Bell System lineman below helped to put fallen telephone lines back to work. The wrench carried on this man's left hip is especially designed to fit various standard sizes of hardware.*

Requirements for materials and supplies, indeed vast, were submitted directly by the operating companies to the nearest distributing house of the Western Electric Company, the manufacturing and supply organization of the Bell System. An idea of the magnitude of this supply operation can be gained from the requirements of the New England Company alone during Carol and Edna — some 12,900,000 ft of drop wire, 1,300,000 ft of strand wire, 1,300,000 linear ft of cable, 5,400 poles, and 2,300 tons of hardware.

Hazel, whose destruction was spread out over a large geographical area, did not require the shifting of forces between companies; however, there was extensive deployment within each company's territory, and there was, of course, an equally large requirement for materials and supplies.

Clearly, this enormous task could not have been accomplished in such a short time without the degree of standardization existing in the Bell System. Movement of large numbers of men into a foreign environment to perform at immediate peak efficiency side by side with home forces can be successful only when standard methods, organization, and equipment are used. Throughout the Bell System, for the same craft, all men receive basically identical training in techniques, methods, and safety. Work operations and testing procedures necessary to every phase of telephone plant construction and maintenance are detailed in standard publications known as Bell System Practices. Primarily the product of the AT&T Co's Operation and Engineering Department, these practices are used by all of the System operating companies to form the foundation for performing their work operations as well as a guide for engineering a standardized telephone plant.

Although local variations in terrain and plant requirements determine to some extent the organizing and equipping of Bell System forces, a large degree of standardization is achieved. For instance, the heavy line gangs are composed of a line foreman with from three to five men, depending upon the local job requirements. The majority of gangs of this type sent into the New England area to assist in restoration consisted of four men plus a foreman. Each gang is built around one of several standard vehicular units equipped with gear for line construction and heavy repairs. Other forces such as the two-man splicing crews and the installation and repair unit are manned and equipped in a manner common throughout the Bell System. Not only the tools and materials carried by these crews are standardized, but even the location of these tools and material on the standard trunk bodies is standardized to a large degree, so that, if necessary, a workman or a gang can work efficiently from any standard vehicle to which either is assigned. These conditions make it possible to integrate forces from scattered locations. A construction superintendent requiring additional splicing forces during an emergency needs only to determine his requirements in terms with which he is familiar. When the assistance arrives, he has a good idea of what he has received — the organization of the men, their skills, their training, their tools, their vehicles, their equipment — regardless of from where they may have come.

The compatibility necessary for interconnection of Bell System circuits long ago led to uniform components, apparatus, and transmission characteristics. Long distance telephone circuits are engineered so that the component sections operate more or less as an entity within themselves, thereby permitting extensive interconnection with practically no regard for the distance involved in the over-all circuit to be established. Such a large degree of flexibility has been achieved in this respect that the more urgent services can be rerouted whenever

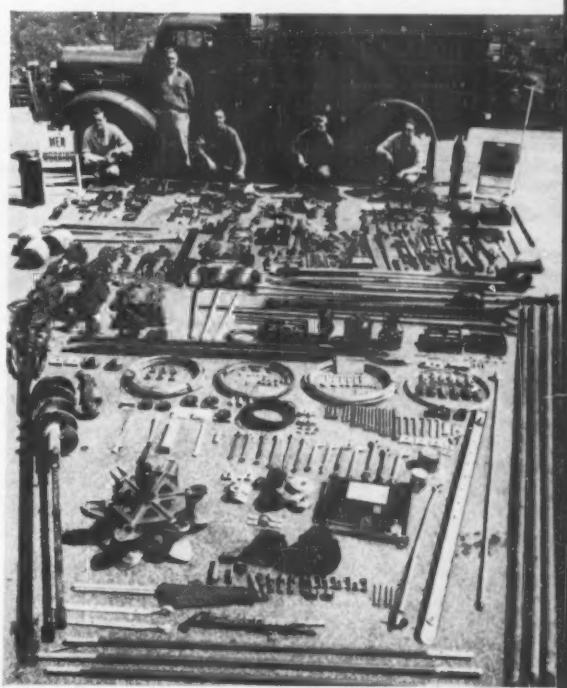
other working facilities are available. These reroutes, often made in a matter of minutes by a system of patches, are possible because of procedures and equipment provisions basically common to all central offices. Engineering specifications for all classes of Bell System outside plant are contained in a series of the Bell System Practices. Cable, pole line, and open wire structures in Maine have no basic difference from those of the same class in Alabama except for the degree of strength built into them to meet the "storm loading" requirements. The tools of a lineman from Nevada will fit the hardware on a telephone line in New Jersey. Even body belts and lineman's climbers (both used for working aloft on poles) are standardized so that a lineman may work safely and efficiently in a strange area even though these, his most intimate tools, may have to be replaced due to loss or damage.

The equipment, material, supplies, and tools used by Bell System people are supplied by the Western Electric Company. With minor exceptions, standard items are used by the companies in their operations. This standardized stock, maintained by Western Electric in their 29 distributing houses located throughout the country, proves of particular value during emergencies such as the hurricanes. Heavy demands in one area can be met by rush shipments of supplies from distributing houses in other areas or from factory stocks.

Another factor influencing coordinated restoration activity is the uniform administrative procedures employed by the Bell System Companies. Although not identical in each company, staff operation, accounting, and engineering procedures follow the same pattern.

During the height of the hurricane emergencies, damage reports received were highly uniform, permitting accurate comparison of damage between companies. In the field, under emergency circumstances, proper allocation of restoration expenditures — between capital and maintenance accounts to mention just one — was greatly facilitated by similar accounting procedures.

The success achieved in the restoration of damage caused by Carol, Edna, and Hazel can certainly be attributed in large measure to the unity of operation carried on by the Bell Companies. But, rather than being born of an emergency, this close teamwork has been the basis of successful operation for years. The Bell Telephone Laboratories directs its efforts toward development of equipment and scientific investigation of materials to ensure that the finest equipment and materials consistent with cost are available to meet the telephone requirements, basically common throughout the country. The Western Electric Company manufactures, procures, and distributes for the System with first-hand knowledge of the demand for quality and expedited service. The AT&T Co's Operation and Engineering Department studies thoroughly all phases of the engineering, construction, and maintenance procedures to insure that methods are efficient and maintain the uniformity essential to a nationwide system. With these services at their command the operating companies are able to provide a high grade of service with a minimum amount of effort and cost, during both normal conditions and emergency conditions.



Two line gangs *from two widely separated areas here put their equipment and tools on display. The type of truck and its body may vary with the year of manufacture but the tools and equipment that make up its contents show close basic standardization. Some variation naturally exists because of differing requirements in the Mountain States (below) and in Ohio (right).*

The Origins of Proposed Shock and Vibration Terminology

by DR SANFORD P. THOMPSON

The Author — *This article was prepared by Sanford P. Thompson, chairman of the writing group which drafted the Proposed American Standard on Shock and Vibration Terminology. A physicist in the Mechanics Division of the Naval Research Laboratory, Dr Thompson is also known in the field of vibration mechanics for his early work in the calibration of pickups by reciprocity.*

The proposed new standard is planned as a supplement to American Standard Acoustical Terminology, Z24.1-1951. The Writing Group of which Dr Thompson was chairman was a subgroup of Sectional Committee Z24 on Acoustical Measurements and Terminology, sponsored under ASA procedure by the Acoustical Society of America. This committee is working on a broad program of standards in the acoustical field.

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THE first nationally standardized terminology developed specifically for the subject of mechanical shock and vibration is now being published for study and trial. The scientific, technical, and industrial public, which is necessarily and properly the final arbiter in standards matters, is being asked to use the proposed standard and give its opinions on the terms suggested.

Words are the stuff of which thoughts are made, and the creation of new words and new meanings for old words affects in some way the life of everyone. Therefore, some general understanding of the process of evolving a new terminology will perhaps be interesting and this article will attempt to give the necessary information. In addition, the author will try to provide the user with a background against which he can better appreciate the special difficulties which the new standard seeks to lessen.

Men have two kinds of motives for understanding the vibratory motions of mechanical systems — practical and scholarly. The common use of metals, with their large mass density and high degree of freedom from internal dissipation, provides the practical motive; and man's desire to comprehend better the physical phenomena accompanying resulting technical advances provides the scholarly motive. Thus the history of vibration mechanics, from one point of view, parallels the development of the technology which was generated by the Industrial Revolution, and from another point of view depends upon the development of mechanics and pure mathematics as sciences.

In considering the effect of these two influences, we must at the outset appreciate that they did not both operate with equal intensity at any single historical period. Prior to a point in time which lies somewhere between the year 1877 (which saw the publication of Rayleigh's *Theory of Sound)* and the First World War, technology was meeting a host of siatuations involving vibration which the science of the era was incapable of exploring sufficiently, and in this period the contribution of technology to the development of the subject was mainly limited to generating a collection of unsolved problems. The principal advances in that same period were scholarly and consisted in formulating, for small vibrations, those physical concepts and mathematical descriptions which comprise the foundations of our present-day understanding of the subject. Acoustics and vibration mechanics were closely interrelated in the thoughts of those who were then maintaining and developing these two branches of mechanics. For the most part they were the same individuals, educated in the same 19th century material, and using the same set of conceptual, verbal, experimental, and mathematical apparatus.

Then occurred a significant bifurcation. The acousticians, being primarily scientists rather than engineers, tended to drop the problem of vibrations in solids — on which further theoretical development was obviously a matter of considerable difficulty and for which the instrumentation of the day was clumsy and inaccurate — and turn the larger share of their attention to the problems of architectural acoustics and hearing. At the same time the engineers of the period, being more motivated by the practical importance of vibration problems than by their readiness for scientific investigations, tended to absorb into their own subjects those portions of vibration mechanics which most affected them.

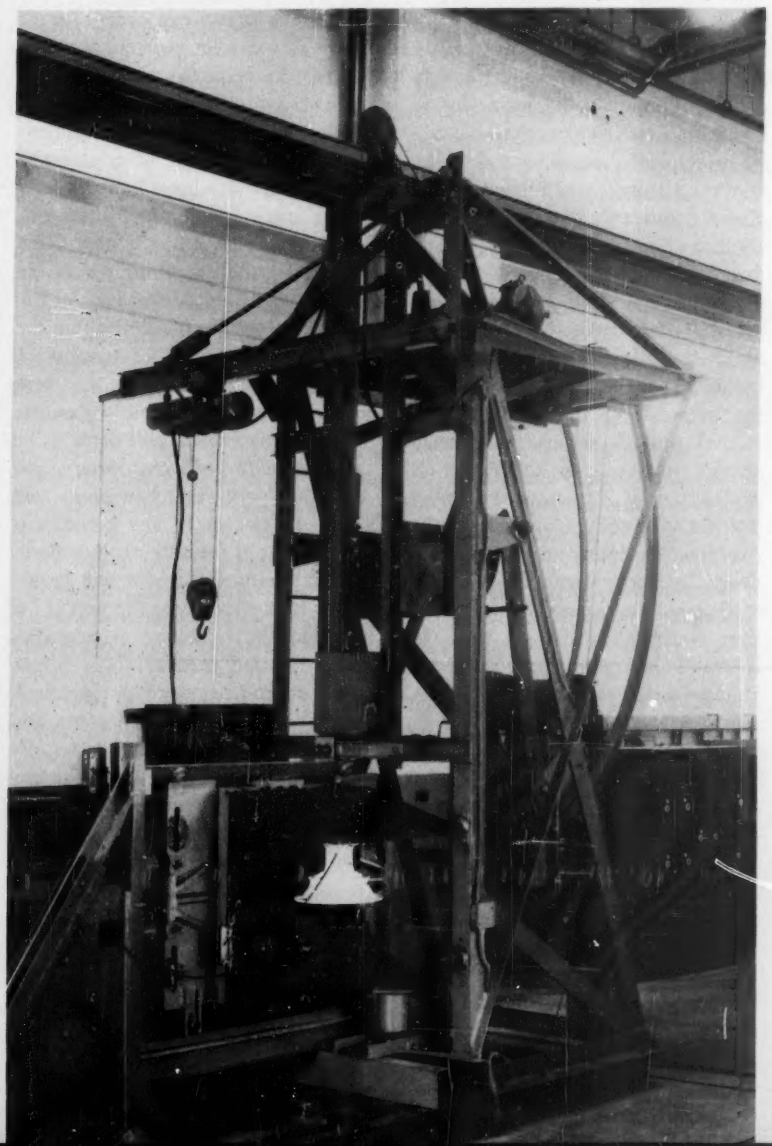
The period between the two wars saw, for example, intensive study by mechanical engineers of the transverse and torsional vibrations of shafts of rotating machinery, and by marine engineers of the whipping

modes of ships. In addition to the study of these classical problems, there arose in the aircraft industry the necessity for understanding flutter, and in the automotive industry for considering the rideability of vehicles. Significant advances were made on these problems, but the advance in each branch of engineering was due more to the ingenious discovery of techniques especially appropriate to the particular subject matter than to fundamental improvements in either the conceptual or experimental apparatus generally available.

This schism between acoustics and vibration mechanics was widened even further by the demands of the Second World War. The revolution in military electronics occasioned an urgent necessity for protecting delicate military equipments from the vibrations caused by propulsive machinery, and from the mechanical shocks which they suffered in transportation, and by the effects of ordnance. Almost by necessity, vibration mechanics became an engineering specialty in its own right. At least two new industries sprang up: the manufacture of shock and vibration isolation devices, and the manufacture of instruments for recording and analyzing shock and vibration data. In addition to the knowledge upon which these new enterprises rested, significant advances were also made in the measurement and synthesis of mechanical shocks, and in their quantitative description.

This lighting fixture *is being exposed to a simulated service condition on the Navy's light-weight high-impact shock testing machine. An American Standard on materials and dimensions of this machine is now under consideration.*

Official U.S. Navy Photo



The new standard had its beginnings at the close of this period, when the comparative terminology of the two subjects had become confused. Since words tend to acquire their meanings in relation to those particular examples of their use which our experiences have impressed upon us, workers in each branch of mechanics had tended unconsciously to take as general definitions of their technical terms certain specialized meanings which were especially appropriate to their own subject. Since, also, the recall of connotations which are either broader or more restricted than is customary tends to be unnatural, imperfect, and impermanent, they had also tended to forget what these specialized meanings implicitly take for granted.

In addition to altering the common 19th century vocabulary, workers in both fields had also augmented it. The needs of both subjects during the period of their separation had led to the practice of attributing to the classical words additional connotations and usages for which the older work provided no direct example, and hence no sharply delineated implied definitions. These words, which outwardly appeared to be the same, but whose interpretation had become different in significant respects, were serious sources of difficulty. The new words which each subject was by now using, but which the other did not customarily employ, naturally caused no particular misunderstanding.

On these grounds, the terminological division which had been growing for roughly a half century was understandable; but it was at best artificial, and at no time could it ever have been successfully defended on either conceptual or practical grounds. Fortunately, there were at work powerful influences for its undoing, not the least of which was a growing awareness of the importance of minimizing or alleviating the effects of acoustic noise. This noise, which was suspected of causing significant hearing loss in industry and which was known to advertise undesirably the presence of certain mili-

tary vehicles, was, for the most part, generated in machinery and structures with whose vibrations the engineer is accustomed to deal, but propagated to and through the adjacent gases or liquids by mechanisms with which the physical acoustician is the more familiar. Certainly the associations between workers in these two subjects which such recognition enforced was a powerful stimulus toward a unification of their technical language.

Another powerful stimulus was also at work. Certain segments of the scientific and engineering community, many of whom were in the Naval scientific service, began to appreciate that the common use of the resistance-wire strain gage and the analog computer would almost inevitably lead to an intensification of activity in the field of mechanical shock and vibration, and that the time for tidying up the terminology was long past due. Accordingly, early in 1947, a semiofficial committee representing the principally interested Naval activities was charged with preparing a shock and vibration terminology for Navy-wide use. Their standard, entitled "Proposed Definitions and Standards on Vibration and Shock in Naval Structures," was circulated privately by the Navy late in the same year and received a limited degree of official endorsement.

It soon became apparent, however, that this endorsement was more theoretical than actual and that standardization of terminology on a national basis was, in fact, a prerequisite for standardization within the Navy. Despite the limited objectives of that standard, and despite its limited acceptance, a great deal was nevertheless achieved by the committee in formulating basic concepts, many of which have survived up to the present, and in training its personnel, two of whom continued to contribute to the work and eventually to the drafting of the new standard.

ASA Sectional Committee Z24 (sponsored by the Acoustical Society) was at that time the only nationally recognized standards organization whose scope of interest was suited to the work. The profession of vibration mechanics should be grateful that this organization did at that time recognize its opportunity to be of service, and that it did so interpret its scope of interest, for otherwise a most undesirable postponement of national standardization would in all likelihood have resulted. Fortunately, it came about that in the Spring of 1948, Sectional Committee Z24 took formal cognizance of the subject of mechanical shock, and had Subcommittee Z24H organized and functioning by the Fall of the next year. This subcommittee was composed of about two dozen individuals whose interests were principally in mechanical rather than in acoustical matters. It took as its first task the revision of the terminology affecting shock and vibration which was contained in the 1942 version of Z24.1, American Standard Acoustical Terminology, which standard was at that time being expanded and modernized throughout.

The work did not, however, proceed smoothly. It is, in retrospect, unlikely that it should have, for it is one thing to recognize as a guiding principle that acoustics and vibration mechanics should ideally employ a common language, and quite another thing for an expert in one of these fields to acquiesce in the requested modification of a term whose definition has become classical, and which, for him, is completely satisfactory. It was entirely natural that the influence of the differences in mental outlook which were occasioned by the long separation of acoustics and vibration mechanics was not to be denied, nor was it to be overcome except by means of a reappraisal of fundamental thinking extending over a considerable period of time. For want of sufficient time, the desirability of many of the requested changes did not become properly appreciated, with the result that certain important terms — particularly some in the section on general definitions — remained, for vibration mechanics, unsatisfactorily defined.

The outcome might possibly have been different if the acousticians had not then also been attempting to reconcile their terminology with that of still a third professional group, the radio engineers. The vibration engineers, lacking a nationally recognized professional society, were at a distinct disadvantage in the inevitable bargaining, and while the 1951 revision of Z24.1 may have pleased this third group, it left the shock and vibration people generally dissatisfied, particularly with the general definitions, upon whose meaning the interpretation of the more specialized definitions necessarily depends.

The parent committee, Z24, immediately recognized that such was the case and generously undertook to remedy the situation by constituting in the Fall of 1950 a new writing group, Z24-W-11. This group was freed from the necessity of adhering to the classical general definitions and was allowed to restate fundamental concepts in whatever manner it deemed most appropriate. With a view toward an eventual unification of mechanical and acoustical terminology, the group was charged with keeping the new terminology as much like that for acoustics as was feasible but with avoiding any sacrifice of the needs of the shock and vibration people just for the sake of conformity with existing standards.

The success with which these objectives have been met is now to be judged by the extent to which the new standard meets the needs of the American public. It may be that the new modifications and extensions of the older definitions, for the most part outwardly minor but sometimes critically significant, will come to be acceptable to both professions, and that the hiatus in terminology will again be closed. In any event, it is hoped that in forming his judgments of the standard the user will be assisted by the foregoing account of the terminological history of acoustics and vibration mechanics — of how the terminologies were first identical, of how they came to grow apart, and of the most recent attempts to reunify them. The recounting of this history will also perhaps serve to re-emphasize that terminology grows and evolves and that the maintenance of a standard terminology is a never-ending process of revision and compromise, in which all interested individuals should in some way participate.

Plan Active Work on Pan American Standards

by ELLSWORTH F. SEAMAN

Standardization Planning Engineer
Bureau of Ships — Department of the Navy

"The engineering profession, in the humanitarian sense, is dedicated to the betterment of human welfare, and engineering achievements are reflected in an ever-increasing improvement in the standard of living, whether this be found within the national boundaries of a country, or whether it has become more universal in nature through international understanding and cooperation. In these thoughts are found the stepping stones to international standardization which, in an environment of long range planning and timely implementation, cannot fail to result in an ever-improving community of the Americas."[1]

STANDARDIZATION within the Western Hemisphere has one of the strongest potentials for contribution in a major way to the betterment of the American countries. It was this thought that prompted the U.S. proposal made during the 1954 meetings of UPADI (Union Panamericana de Asociaciones de Ingenieras), concerning the activation[2] of a Pan American Standardization Committee.

UPADI is an organization founded in Rio de Janiero in July, 1949, and formally organized in April, 1951, in Havana, Cuba. The 1954 meetings were held in São Paulo, Brazil, from August 2 to August 6, inclusive. Delegations from 15 American countries were present, including the U.S. and Canada. The U.S. delegation included two past presidents of the American Society of Mechanical Engineers and one former president of the American Society of Civil Engineers.

The UPADI Constitution contains within stated objectives the elements of lasting and useful association among the American countries, leading to both social and economic improvements. The organization, as stated in the Constitution, is sponsored in each of the participating countries by a "society, or federation of societies, recognized by the engineering profession of that country." In the United States, this body is the Engineers Joint Council.

The UPADI Constitution states further the purpose of the organization: "Closer technical relations between American countries; the economic development of the American countries; to dedicate the heritage and talents of the engineering profession to the welfare of mankind through the easing and advancement of human labor, and through broader utilization of nature's materials and resources."

This statement of purpose encompasses the theme of standardization. Through standards we reduce waste and conserve resources; we make way for creative effort in place of repetitive and routine tasks; we create as an end result a stronger economy and a higher living standard.

During the UPADI plenary session this year, it was proposed by the United States that a Pan American Standardization Committee undertake the planning of work programs in those areas where yield would be greatest in economic and technological benefits. This proposal was sup-

Mr Seaman was one of 35 delegates and their guests who represented the USA at the Third Convention of UPADI (Union Pan-Americano de Asociaciones de Ingenieros) at São Paulo, Brazil, August 2-6, 1954. Representatives of 17 Western Hemisphere nations were present.

The convention adopted a resolution to reactivate the Pan American Committee on Standardization to encourage development of an inter-American program of engineering standards. The committee will have headquarters in Rio de Janeiro.

UPADI is a union of the principal engineering societies of most of the nations of the Western Hemisphere. The Engineers Joint Council is the United States member. The Council is composed of eight major engineering organizations: American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, The American Society of Mechanical Engineers, American Water Works Association, American Institute of Electrical Engineers, Society of Naval Architects and Marine Engineers, American Society for Engineering Education, and American Institute of Chemical Engineers.

The next meeting of UPADI will be at Mexico City in 1956.

For a discussion of the status of standards in Latin America, see the article by Edmund A. Pratt, page 389.

[1] From paper "Standardization and Engineering Achievement," submitted to UPADI by the U.S. delegation during its meeting at São Paulo, Brazil, in August, 1954. Copies of the paper, which is now being circulated to all UPADI member countries for comment, are available from the American Standards Association.

[2] A Pan American Standardization Committee has been in existence, although it has never been active.

NOTE: The opinions or assertions contained herein are the private ones of the author and are not to be construed as official or revealing the views of the Navy Department or the naval service at large.

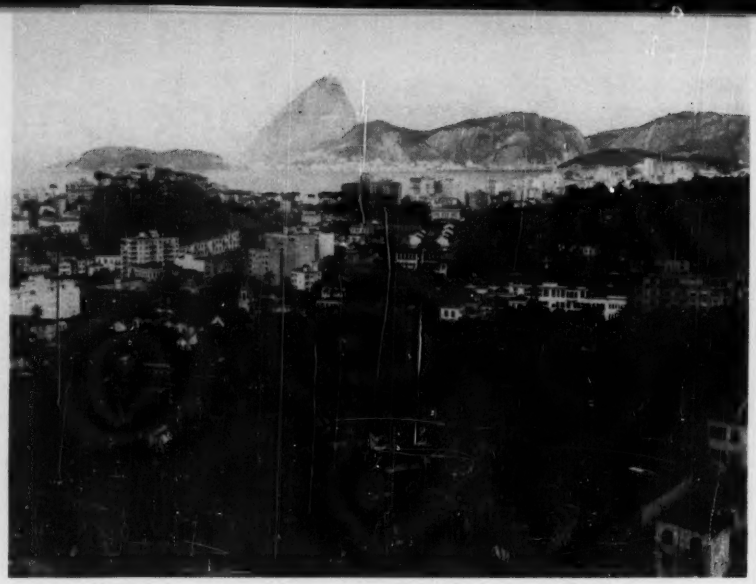
ported by a member of the Brazilian delegation.

During the committee meeting which followed the plenary session, the question of standardization was again discussed with the members of the Committee on Technical Matters. The conclusions of the committee were prepared in resolution form for presentation to the final plenary session of UPADI. The wording of the resolution stated that the study entitled, "Standardization and Engineering Achievement"[3] would be used as a basis for planning purposes in developing a program for the Pan American Standardization Committee. This resolution, when presented before the plenary session of UPADI, was unanimously approved.

It was the intention, in bringing the subject of standardization before UPADI, to achieve a broad engineering acceptance of the idea in terms of an essential and desirable kind of effort. Study and evaluation of standardization needs should, in a planning sense, uncover areas of profitable work programming. Successful achievement of this aim would provide sponsoring support for projects undertaken by national standardization bodies such as the ASA and its southern counterparts. In this connection, the matter of Pan American standardization was discussed in STANDARDIZATION, page 266, October, 1949, and page 326, December, 1949.

It is the observation of the writer that the spirit of cooperation evidenced by the delegates to UPADI can be of inestimable and lasting value. Success depends on continued encouragement from all quarters, and especially in the United States, for those areas where common industrial standards mean lower cost procurement, higher quality, and mutually beneficial economic gains. No better key word could be found for the fostering of such a trend than "standardization." An active Pan American Standardization Committee should provide an opportunity for interested U.S. sources to participate in furthering the cause of useful standardization.

[3] See resolution in next column.



Rio de Janeiro — *headquarters of Pan American standards committee*

The Latin American countries, like less developed countries of other regions, are peculiarly sensitive to the standardization practices of the industrial countries from which, during the early stages of their development, they obtained their capital equipment — railways, mining equipment, industrial machinery, electrical communication apparatus, electric power generating and using equipment, etc. These sources of supply have left their definite imprints on standardization in Latin America, and sometimes they have left a heritage of difficulties to be faced by industries and the national standards organizations. Not only is it generally necessary to obtain replacement parts from the supplier of the original equipment, regardless of price or other factors, but in many cases ancillary equipment has to meet standards imposed by the original equipment. A well-known example is the adoption, in most Latin American countries, of 50-cycle frequency for alternating-current electric generating plants. The adoption of this European standard requires that motors, motor-driven equipment, and other appliances (including electric clocks) be suited to this frequency. Since apparatus of this kind manufactured in North America is normally designed for a frequency of 60 cycles per second, and 50-cycle equipment is "special," the saving is lost that might otherwise be derived from buying from the latter source standard products manufactured in great volume. — *QUOTED FROM ARTICLE BY E. A. PRATT ON STANDARDS IN LATIN AMERICA, PUBLISHED IN THE DECEMBER 1954 ISSUE OF McGRAW HILL'S INGENIERIA INTERNACIONAL INDUSTRIA*

UPADI RESOLUTION ON PAN AMERICAN STANDARDS COMMITTEE

Following is a draft of the official text of Resolution XXXVI adopted by the Third Convention of the Pan American Federation of Engineering Associations (UPADI) at São Paulo, Brazil, August 2-6, 1954 —

XXXVI. So that the functions of the Pan American Committee of Technical Standards may commence, it is resolved:

(a) To form the said Committee with a representative of each Member of UPADI, this man to be the link between his country and the Executive Committee referred to in item *(b)* below;

(b) To appoint an Executive Committee made up of persons resident in the locality of the headquarters of this organization;

(c) To ratify as the headquarters of the Pan American Committee of Technical Standards the city of Rio de Janeiro;

(d) To establish that the duties of the Executive Committee shall consist of organizing the program of work, coordinating any propositions put forward by members of the Pan American Committee of Technical Standards, and drafting regulations on the procedure to be followed until the definite adoption of each standard;

(e) To recommend to the Executive Committee that they take into consideration the paper presented to the Convention by Eng. Ellsworth F. Seaman, entitled "Standardization and Engineering Achievement."

Standardization In Latin America

by EDMUND A. PRATT
Consulting Engineer

THE need for national standardizing bodies in the Latin American countries became apparent two decades or more ago, and the countries which are most advanced industrially now have active standards institutes or associations. Commerce with the industrial countries of Europe and North America for a long period of time had introduced many industrial standards of those countries through the medium of equipment obtained from those sources, and in some cases through the ownership or management of large Latin American enterprises by European or North American interests. The establishment of national standards has therefore been influenced to a considerable degree by the standards of other countries. In the following paragraphs are presented brief notes on the national standards organizations of Argentina, Brazil, Chile, Mexico, and Uruguay, the five countries in which such organizations have become well established.

ARGENTINA. The first national standards organization to be established in Latin America was the Instituto Argentino de Racionalización de Materiales (IRAM), organized in 1935. This Institute is a private body with 533 members (in 1952), of whom about one-half represent producers and distributors, about 10 percent represent consumer interests (including government agencies), 84 are private or official nonprofit organizations (universities, schools, research institutions, etc), and the remainder, about one-quarter of the total membership, are individual members. The major portion of IRAM's financial support is provided by the producing and distributing interests.

Under IRAM procedures a draft standard is prepared by a study committee, taking into account the views of producers, distributors, consumers, and technical interests. The final draft is submitted to the appropriate specialized standing committee and subsequently to the General Committee on Standards (a coordinating body). After committee approval and certification by the Managing Council of IRAM that the prescribed procedures have been followed, the standard becomes an "IRAM Standard."

IRAM Standards are given official status by the Comisión Nacional de Uniformación de Materiales, an office in the Ministry of Industry and Commerce. This process entails submitting the standard for public discussion and, in the absence of objections, designating it a Provisional Standard (NP) for a period of one year. After one year, again in the absence of objections, it is promulgated as an Official IRAM Standard (NIO), and its use thereby becomes mandatory in government agencies.

The November 1953 IRAM Catalog listed 781 standards, of which 141 were Official (NIO) and 66 were Provisional (NP). Of the remaining 574 more than half were in the process of being made Official. Some 200 additional standards were under study. The greater number (one-half) of IRAM Standards are in the fields of metallurgy, applied chemistry, electrotechnology, and construction materials.

BRAZIL. The second national standards organization to be established in Latin America was the Associação Brasileira de Normas Técnicas (ABNT) which was formed in 1940. Organized by technical and industrial interests, technological institutions, and official entities, ABNT took over the standardization work initiated in 1937 by a group of testing laboratories at a meeting in that year under the auspices of the Instituto Nacional de Tecnologia of Rio de Janeiro and the Instituto de Pesquisas Tecnológicas of São Paulo. ABNT is a private organization with corporate and individual members; its financial support is derived from its membership and from agencies for which it performs services.

ABNT standards comprise Brazilian Standards (NB), Brazilian Specifications (EB), and Brazilian Methods (MB), all of which are developed by the collaboration of producers, consumers, government agencies, technical institutes, and other interested parties. The Association has some 25 or more Technical Committees. About half of these deal with standards falling within the fields of civil engineering and construction and manufactured products. Others deal with electrical engineering, mining, extractive products, and general subjects such as technical drawings and technical vocabularies. ABNT has given close attention to terminology with a view to insuring uniform usage throughout the country.

Some 200 standards have been issued by ABNT (the available list is not up to date). Somewhat more than half of these are methods and most of the others are specifications for materials. A smaller number deal with the design and execution of structural work and with electrical installations.

Standard specifications and methods had been developed in Brazil for nearly a decade prior to the formation of ABNT by the Instituto de Pesquisas Tecnológicas (IPT), which issued its first tentative specification (for bricks) in February, 1932. Since then a large number of specifications have been developed by IPT.

CHILE. The Instituto Nacional de Investigaciones Tecnológicas y Normalización (INDITECNOR) was formed in 1944 by the University of

NOTE: This article comprises two sections of a feature originally presented in Spanish in the December 1954 issue of *Ingeniería Internacional Industria*.

Chile, the Association of Engineers of Chile, the Institute of Mining Engineers of Chile, and the Corporación de Fomento de Producción. It functions under the auspices of the University of Chile. Other entities having the right of membership include the four other Universities of Chile; a number of government agencies concerned with mining, agriculture, public works, supplies, and the national defense; other engineering institutes; certain financial institutions; and the State Railways. The Council may admit other entities or persons to membership.

On initiation of a standards project a study committee, in which producers, consumers, and technical interests are adequately represented, prepares a draft which is submitted to the members of the INDITECNOR Division for the Study of Standards for comments. Once approved, the standard is first issued as a Provisional Standard for a period of at least six months, after which (if satisfactory) it is submitted to the Council for approval as a Definitive Standard. The Council may authorize the Director to request the government of the Republic to declare any INDITECNOR Standard an Official Chilean Standard, thereby making its use by government agencies mandatory.

In the May, 1954, list of INDITECNOR standards there are 84 Official Chilean Standards; 69 Emergency, Provisional, and Definitive Standards; 12 standards projects; and 244 Anteproyectos (drafts); a total of over 400. The fields of greater activity appear to be those of construction materials, metallurgy, electrotechnology, and paints, varnishes, and lacquers. Eight safety standards are listed, of which five are Official Chilean Standards, and it is known that some 20 additional safety projects have recently been taken up.

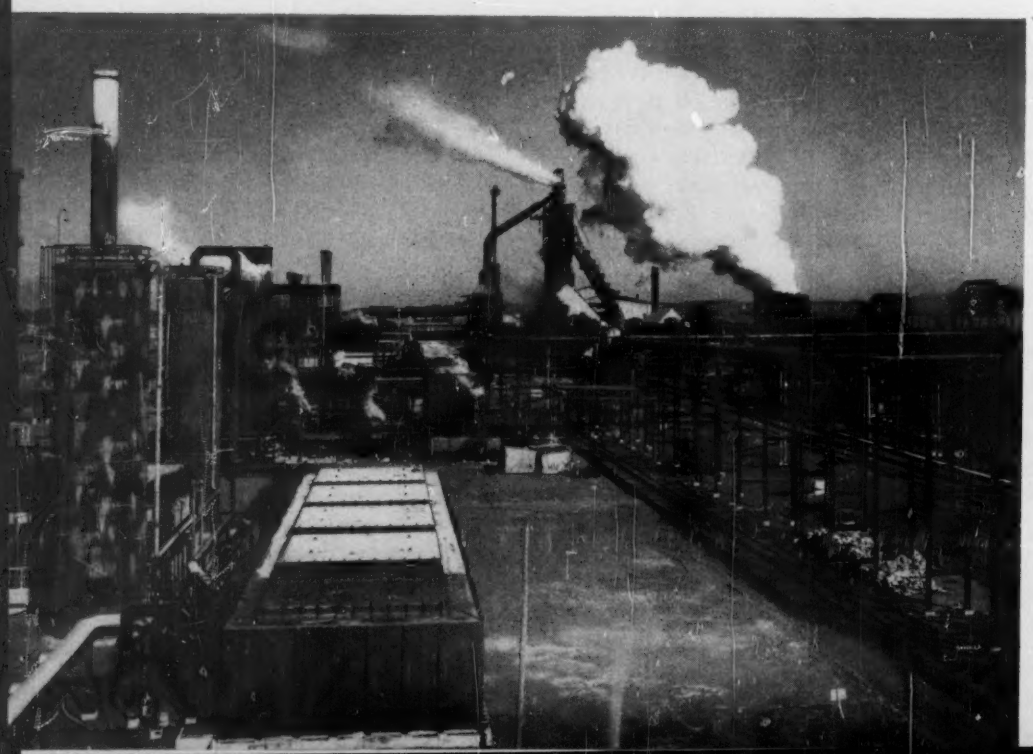
By a Decree Law issued in July, 1953, certain tax concessions and credit privileges are made conditional on whether the products of the industrial establishments that benefit thereby meet minimum standards of quality. A certificate of compliance issued by INDITECNOR is prescribed. The Law becomes effective in February, 1955, and the absence of many quality standards of the kind required poses a rather serious problem for those concerned with the Law's enforcement.

MEXICO. The Dirección General de Normas (DGN) was set up in the Secretaría de Economía Nacional in 1943. It is thus a government bureau, in contrast to the standards organizations of Argentina, Brazil, and Chile. It was originally the intention to establish a number of standing committees on standards which would eventually constitute a private standards association with which DGN would cooperate. Up to the present this idea appears not to have been carried out, though industries are consulted in the drafting of DGN standards.

From June, 1943, to December, 1952, DGN issued 248 "Quality Standards," the greater number of which are in the fields of metallurgy and metallic manufactured products (52), the chemical industry (41), foods (33), construction materials (27), electrical materials (23), and textiles (23). These six groups, aggregating 199 standards, constitute four-fifths of the total.

URUGUAY. The Instituto Uruguayo de Normas Técnicas (UNIT), the third standards organization to be formed in Latin America, was established in 1941 by several government departments and agencies, the Municipality of Montevideo, associations of engineers and architects, and faculties of engineering and architecture. It is a private organization, though its standards are frequently adopted by government agencies. Its committees are constituted of persons and organizations having an interest in the subject under consideration.

Up to December, 1952, a total of 83 standards had been issued by UNIT. Nearly one-half of these (38) are in the field of "civil construction," 23 of these being specifications for



Modern steel mills *at Huatchipato, Chile. In foreground are a wire mill and ferro-alloy plant. The wire mill uses wire bars from the steel mill and the ferro-plant supplies its products to the steel mill, the interrelation making standardization essential. Welded structural shapes are important products of the steel mill. American Welding Society's standards form the basis for this work.*

Photo Courtesy Pacific International

construction materials. The next most important groups are bituminous materials and paints, with 15 and 14 standards, respectively.

INTERNATIONAL COOPERATION. A review, however brief, of Latin American organization in the sphere of standardization would be incomplete without some account of the regional and world-wide collaboration that is also taking place. The national standards organizations collaborate not only with each other, but also with the national standards bodies of North America, Europe, Africa, Asia, and Australasia.

At the Third Convention of the Unión Sudamericana de Asociaciones de Ingenieros (USAI), held at Santiago de Chile in 1939, a resolution was adopted recommending the creation of a South American Standards Committee. An organizing committee was set up, but there was considerable delay in implementing its recommendations, which had been drawn up at Rio de Janeiro in 1941. At a meeting of Inter-American Development Commissions in New York in 1944 a recommendation was adopted favoring the creation of a Pan American Standards Committee. Various circumstances delayed the formation of this committee, but it was eventually established (nominally, at least) at meetings in São Paulo and Petrópolis, Brazil, in 1949.

The usual obstacles, primarily lack of funds, have plagued this effort towards regional collaboration, though the project was approved and encouraged by the Convention of the Unión Panamericana de Asociaciones de Ingenieros (UPADI) in New Orleans in 1952, and again by the UPADI Convention at São Paulo in 1954. It is thought that the Pan American Standards Committee would be most effective, not in attempting to set up regional standards, but in stimulating the formation of national standards organizations in all Latin American countries. Since the regions of the world are all interdependent, international collaboration in the unification of national standards can best be carried out on a world-wide scale through the International Organization for Standardization.

Plans for development *of the Amazon basin are being made by the Brazilian Government with the help of the United Nations Food and Agriculture Organization. The Amazon basin covers one-third of Brazil but barely supports only one-twentieth of the population. Scientific exploitation of the area's rich forests and reclamation of flooded jungle land are among the plans. Here, a crane is stacking logs brought up from the river. This sawmill is located on the River Guama, a tributary of the Amazon. Below — a night view at the Huatchipato, Chile, steel plant.*

United Nations

New Members of ASA's Board

J. L. CRANWELL, vice-president of the Pennsylvania Railroad Company, was elected vice-president of the American Standards Association for a three-year term effective January 1, 1955, according to announcements made at ASA's annual meeting November 15. New members of the Board of Directors for 1955 were also announced.

A native of Oklahoma, Mr Cranwell entered the service of the Pennsylvania Railroad in 1926 at Cape Charles, Va. He has been successively Superintendent, General Superintendent, Assistant General Manager, and Assistant Vice-President with headquarters at various locations throughout the East and Middle West. Since April, 1953, he has been vice-president with offices at New York.

In addition to his affiliation with the Pennsylvania Railroad, Mr Cranwell is a Director of a large number of railroad companies. He is also active in a large number of commercial and civic welfare organizations, such as the New Jersey Taxpayers Association, of which he is Director, and member of the Executive Committee; the West Side Association of Commerce, of which he is a Director; the New York State Chamber of Commerce; the Commerce and Industry Association of New York; the Hundred Year Association; and the Regional Plan Association of New York. He is chairman of the Eastern Operating Committee of the Railway Express Agency.

His hobbies and social activities are indicated by his membership in the Metropolitan Golf Roamers, the Newcomen Society, and the Pan American Society of the United States, among others.

New members of ASA's Board of Directors elected for a three-year term are:

W. H. Aubrey, Vice-President, Frick Company, Waynesboro, Pa., nominated by the Air Conditioning and Refrigeration Institute

Vincent de P. Goubeau, Vice-President, RCA Victor Division, Radio Corporation of America, Camden, N. J., nominated by the National Association of Purchasing Agents

Irwin D. Wolf, Vice-President and General Manager, Kaufmann Department Stores, Pittsburgh, Pa., nominated by the National Retail Dry Goods Association

Robert E. Wilkin, Vice-President, Hooker Electrochemical Company, Niagara Falls, N. Y., nominated by the Synthetic Organic Chemical Manufacturers Association of the U.S.

Leo V. Bodine, Executive Vice-President, National Lumber Manufacturers Association, nominated by his Association; and Colonel W. T. Chevalier, Executive Vice-President, McGraw-Hill Publishing Company, member-at-large, were re-elected for three-year terms.

Arthur S. Johnson, Vice-President and Manager, Engineering Department, American Mutual Liability Insurance Company, Boston, newly elected chairman of the Standards Council, is also a member of the Board, as are Roger E. Gay, immediate Past President of ASA, and J. R. Townsend, immediate Past Chairman of the Standards Council. Mr Gay and Mr Townsend succeed T. D. Jolly and W. C. Wagner as Board members.

Of the new Board members, Mr Goubeau and Mr Wolf are well known to ASA members.

Mr Goubeau has been vice-president and director of materials of the RCA Victor Division, Radio Corpo-

J. L. Cranwell

Robert E. Wilkin

Vincent de P. Goubeau

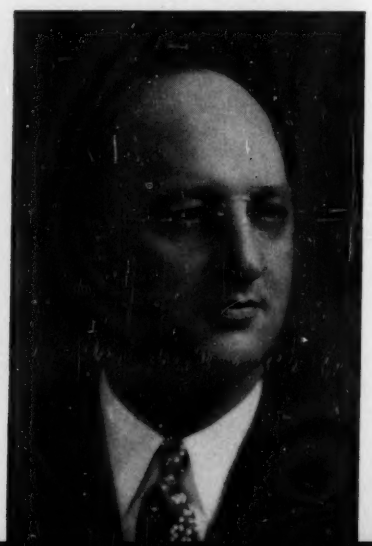
ration of America, since 1949. He has been a speaker at meetings of the ASA Company Members Conference, the National Conference on Standards, and the Standards Engineers Society on the relation of purchasing to standards on a number of occasions. His first experience was in the purchasing department of the United Fruit Company, where he started in 1922. During World War II he was called on to serve as procurement specialist in the Navy Department, until he became Assistant Chief in Charge of Procurement in the Office of Procurement and Material. He is a member and past director of the National Association of Purchasing Agents and a past president of the New England Purchasing Agents Association.

Mr Wolf's contributions to retailing in general, indicated by the fact that he is chairman of the Executive Committee of the National Retail Dry Goods Association, brought him a citation to the Hall of Fame in Distribution by the Boston Conference on Distribution in October, 1953. Now vice-president and general manager of Kaufman's Department Stores, he has been with the Stores for 22 years. He is also vice-president and director of The May Department Stores Company.

In addition to his interest in retailing, Mr Wolf takes an active interest in civic affairs — in development of local opera, the Negro college fund in the Pittsburgh area, in the Boy Scouts, and in the Irene Kaufmann

(Continued on page 394)

W. H. Aubrey



EDWARD T. GUSHÉE

EDWARD T. Gushée, president-elect of the American Standards Association for 1955, died December 15 after an illness of three weeks. Mr Gushée was taken seriously ill in November soon after his return to Detroit from a visit to New York where he had attended the Fifth National Conference on Standards.

Announcement of Mr Gushée's election as president, succeeding Roger E. Gay, had been made at the Annual Meeting of the Association November 15. He had served as the Association's vice-president since 1952.

Mr. Gushée was vice-president of the Detroit Edison Company in charge of the Legal, Rights-of-Way, and Public Information Departments at the time of his death.

He began his career with Detroit Edison in 1920, first in the Sales Department, then organizing the Inspection Division of the Research Department. He then became purchasing agent. In 1935 he was elected a vice-president of the company and in 1936 a director. In 1939 he became Executive Vice-President and Director of the Union Electric Company of St Louis, Missouri.

He was called to Washington to serve as Chief of the Purchase Policy Branch, Ordnance Department, U.S. Army, in 1942, and returned to the Detroit Edison Company as Assistant to the President late in 1942. He was later Assistant to the Chairman of the Board and was re-elected a vice-president as of January, 1948.

Mr Gushée served in many public roles in the City of Detroit — as a member of the Army Ordnance Advisory Board of the Detroit Ordnance District; as chairman of the Detroit Area Production Urgency Committee; as a member of the Labor Priorities Commission, War Manpower Commission; as general chairman of the Community Chest of Metropolitan Detroit in 1948; and as president of the Detroit Streets and Traffic Commission. He had been District Chief of the Detroit Ordnance District since June 1947, and at the time of his death was on the Advisory Committee of the School of Business Administration of Wayne University.

Mr Gushée was author of the book, *The Church Teaches*, and co-author of *Scientific Purchasing*. In 1937 he received the Shipman Gold Medal Award for outstanding contributions in the field of purchasing.

(Continued from page 393)

Settlement. He has been president of the Montefiore Hospital for more than five years.

Mr Wolf has taken an active interest in standardization. As chairman of the ASA Advisory Committee on Ultimate Consumer Goods during the war, he encouraged the development of standards for consumer goods, particularly in the field of textiles. Early this year he presided at the General Conference at which the ASA project on standards for all textiles was launched.

Mr Wilkin has been with Hooker Electrochemical Company since 1936 at which time he became sales manager of fine chemicals. Since 1949 he has been general sales manager and in 1953 was elected vice-president as well. He has been first alternate and then member of ASA's Standards Council since 1951, representing the Synthetic Organic Chemical Manufacturers Association of the United States, which has now also nominated him as a member of the Board.

Mr Wilkin started his career as an instructor in chemistry at the Kansas State Agricultural College in 1922, after having received his B.S. from Denison University at Granville, Ohio, and the degree of master of science from the University of Iowa. His first industry employment was with the Standard Oil Company of Indiana as a research chemist in the general research laboratory at Whiting, Indiana. Later he specialized in lubrication problems and was transferred to the engine laboratories. He became a member of the sales department at Standard's general offices in Chicago in 1927, starting in the technical division and later becoming manager of that division.

Mr Wilkin is a member of Lambda Chi Alpha; Alpha Chi Sigma, professional chemical society; and Sigma Xi, honorary science research society. He has been a member of the Society of Automotive Engineers for 25 years and is a past chairman of the Society's Chicago section. He is also a member of the American Petroleum Institute, and vice-president and board member of the Buffalo-Niagara Sales Executives, Inc.

"Standardization is really more a way of thinking than an end in itself." — *Standardization*, UK Ministry of Supply.

Mr Aubrey, vice-president and assistant general manager of Frick Company, manufacturers of air conditioning and refrigerating machinery, is currently chairman of the General Standards Committee of the Air Conditioning and Refrigeration Institute. He is also a member of the Institute's Board of Directors. In 1943 he served as president of the Air Conditioning and Refrigerating Machinery Association, now a part of the Air Conditioning and Refrigeration Institute.

Irwin D. Wolf

Arthur S. Johnson

•• Arthur S. Johnson, Vice President and General Manager of the Engineering Department, American Mutual Liability Insurance Company, has been elected chairman of ASA's Standards Council. T. E. Veltfort, Managing Director, Copper and Brass Research Association, is vice-chairman.

Both Mr Johnson and Mr Veltfort have been active in the work of the American Standards Association for many years. Mr Johnson has been vice-chairman and chairman of the Safety Standards Board (then known as the Safety Code Correlating Committee); a member of the Company Member Conference; and a member of Standards Council since 1946. He has also served on the Council's special committee of action — the Board of Review. Outside ASA, Mr Johnson is a member of the American Society of Safety Engineers and the American Public Health Association.

Mr Veltfort has also been active in ASA work for a number of years, as a member of Standards Council since 1948, as a member of the Council's Board of Review, and as a member of the Conference of Executives of Organization Members of ASA. He served as vice-chairman of this organization and as chairman in 1953. He is active in the technical work of sectional committees on pipe and piping, on preferred thicknesses of metals, and on surface finishes.

T. E. Veltfort

FROM OTHER COUNTRIES

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. Titles are given here in English, but documents are in the language of the country from which they were received. An asterisk * indicates that the standard is available in English as well. For the convenience of readers, the standards are listed under their general UDC classifications. In ordering please refer to the number following the title.

003.62 SIGNS, NOTATIONS, SYMBOLS

Netherlands (HCNN)

Symbols for different units, general — N 333
Symbols for physicis, part I—general quantities, special quantities: mass, time, force, work — N 1268
Symbols for physics, part 2—acoustics, light, magnetism, electricity — N 1269

531.714 MEASURING INSTRUMENTS AND MACHINES

Poland (PKN)

Micrometers — PN M-53200

531.78 MEASUREMENT OF FORCE, WORK, AND PRESSURE

Poland (PKN)

3 standards on industrial pressure and vacuum gages classification — PN M-53511, M-53513, M-53526

532 MECHANICS OF FLUIDS. HYDRAULICS

Israel (SII)

Water flow measurement in pipes by means of the standard orifice ISA plate — SI 98

533.1 PROPERTIES OF GASES

Czechoslovakia (CSN)

Volumetric tables of natural and artificial gases at different temperatures and pressures — CSN 38 5510

535.6 COLORS

Germany (DNA)

9 standards for color measuring methods — DIN 5033 B1.1/8 and Bb1

536 HEAT. THERMODYNAMICS

France (AFNOR)

Symbols used in thermodynamics — NF X 02-104

536.5 TEMPERATURE MEASUREMENT

Poland (PKN)

2 standards on industrial thermometers — PN M-53751, M-53760
Medical and veterinary thermometers — PN M-53753/4
Thermopiles, characteristics — PN M-53854
Outer metal cover of thermopiles — PN M-53857

542 EXPERIMENTAL CHEMISTRY

Czechoslovakia (CSN)

27 standards for different reagents, see series — CSN 686 . . . and CSN 687 . . .

Poland (PKN)

Determination of density of water solution of sulfuric acid — PN M-53660

542.1 CHEMICAL LABORATORY EQUIPMENT

Germany (DNA)

Glass tube ends for rubber tube attachment — DIN 12215
Ground glass reduction connectors — DIN 12257
Flexible and capillary connecting tubes — DIN 12211
Spiral condensers — DIN 12591
Soxhlet extractors — DIN 12602

Netherlands (HCNN)

Laboratory glassware: classification and methods of test — N 936

Poland (PKN)

Universal clamp stand — PN Z-65300
Enameled evaporating basins — PN Z-66008

543.3 WATER ANALYSIS

Belgium (IBN)

Alkaline titration — NBN 343

France (AFNOR)

Determination of ion sulfate in water — NF T 90-009

549 MINERALOGY

France (AFNOR)

Equivalent English and French terms relative to mica — FD T 13-002

614.84 FIRE BRIGADE

Belgium (IBN)

Standpipe connector — NBN 309
Suction hose connector — NBN 310

Czechoslovakia (CSN)

58 standards for different types of hand and power fire-fighting equipments and their details — CSN 38 9010

Israel (SII)

Portable carbon tetrachloride extinguishers — SI 114

620.17 PHYSICOTECHNOLOGICAL INVESTIGATION

Germany (DNA)

Wear-out tests of materials — DIN 50320

621.3 ELECTRICAL ENGINEERING

Australia (SAA)

Definitions and general requirements for electrical materials and equipment — C.100-1953 Ap
Fixed domestic electric ranges (quality requirements) — AS C.310-1953
Electric hotplates — AS C.311-1953
Multi-heat switches (manually operated types) — AS C.312-1953

Belgium (IBN)

Graphical symbols, part I — NBN 31
Rules relative to motor-operated appliances, domestic and otherwise — NBN 323

Canada (CSA)

Construction and test of hair dressing equipment — CSA C22.2, 36-1954
Construction and test of portable electric tools — CSA C22.2, 71-1954
Construction and test of domestic electric ironing machines — CSA C.22.2, 99-1954

Czechoslovakia (CSN)

28 standards for different details of overhead line — CSN 3486 and 3492
3 standards for small electric motors, 1 to 500 watt — CSN 35041 . . .
7 standards for details of electric machine mounting — CSN 350 . . .
Switch boxes for electric light network — CSN 35 7910
Methods for testing electronic lamps — CSN 35 8530
Ordinary loudspeakers — CSN 36 8261
Graphical symbols for power installation diagrams — CSN 38 0451
Portable type of 3-phase switch board, 40 amp — CSN 38 4324
General rule for servicing hydroelectric power stations — CSN 08 5020
5 standards for parts of electric lighting appliances — CSN 37 1600 . . .
Overhead trolley wire — CSN 42 8460
Switchboard instrument housing, dimensions — CSN 35 6250/1
5 standards for ceramic insulators — CSN 348 . . .
Explosion-proof housings — CSN 34 1490
Standard dc voltages used in electric traction — CSN 34 1500
Specifications for rolling stock of electrified railroads — CSN 34 1512
9 standards for different wires and cables — CSN 347 . . .

India (ISI)

Tungsten filament electric lamps — IS 418
High conductivity annealed round copper wire, enameled — IS 449
High conductivity annealed round copper wire, cotton covered — IS 450
Reels for covered solid round electrical winding wire — IS 482

Israel (SII)

Electric wiring regulations — SI 108

Japan (JISC)

Explosion-proof construction of electric machinery and apparatus for coal mines — JIS C 0901*

Netherlands (HCNN)

Plastic packing glands for watertight entry of electric cables — V 2115
Switch and distribution gear for power installation: nomenclature — V 3041

621.4 INTERNAL COMBUSTION ENGINES

Ireland (IIRS)

Sparking plugs — IS 34

621.5 OPERATION, ADJUSTMENT, AND CONTROL

Germany (DNA)

Regulating mechanisms. Nomenclature and principles — DIN 19226
Control hand wheel with undulated grip — DIN 390

United Kingdom (BSI)

Glossary of terms used in automatic controlling and regulating systems: Section 5: Components of servo-mechanisms — BS 1523: Section 5:1954

621.7 WORKSHOP PRACTICE

Germany (DNA)

Forged steel bars, different section — DIN 7527, B1 6

United Kingdom (BSI)

Chilled iron shot and grit — BS 2451:1954

621.753 TOLERANCES, FITTINGS, GAGES

Czechoslovakia (CSN)

11 standards on ISA system of tolerances and fits, series: CSN 01 4201 . . .

Germany (DNA)

4 standards for screw thread "Go" and "Not Go" gager DIN 2281/4
ISA Tolerances and Fits, Class P, R, S DIN 7161, B1.4
Working gages and taper shaft-end sizes, basic hole class P, R, and S DIN 7164, B1.4

621.824 AXLE TREES. DRIVING SHAFTS

United Kingdom (BSI)

Straight-sided splines and serrations BS 2059:1953

621.83 GEARS, RACKS, ETC

Poland (PKN)

Gear profiles for 1- to 36-mm module PN M-88503

Spain (IRATRA)

Standard gear wheel rack UNE 18028

621.88 MEANS OF ATTACHMENT

Czechoslovakia (CSN)

Wrenches for square socket screws and bolts CSN 230712

Germany (DNA)

Hexagon head bolts and nuts, unfinished, Whitworth DIN 555,-558
Square nuts, unfinished, Whitworth DIN 557
7 standards for different carriage bolts for wood and metal, Whitworth DIN 601/5,-607/8
Hexagon head bolts, types m and mg, Whitworth DIN 931, B1.3

Poland (PKN)

Whitworth screw thread 3/16 in. to 6 in. PN M-02025

621.882.082 SYSTEMS OF SCREW THREADS

Czechoslovakia (CSN)

Comparative tables between Czechoslovak and USSR metric screw threads CSN 01 4092

621.883 SPANNERS. TURNERS. SCREWDRIVERS

United Kingdom (BSI)

Hook spanners, peg spanners, coupling wrenches, and the related slots, holes, and horns BS 2090:1954

621.89 LUBRICATION

Czechoslovakia (CSN)

Mineral lubricating oils CSN 65 6224/5

Germany (DNA)

Lubricating oil for heavy machinery DIN 51508
Determination of solidification point of lubricants DIN 51556
Dark lubricating oil and axle grease DIN 51505

South Africa (SABS)

Standard specifications for lithium-base grease SABS 406-1953

621.92 GRINDING AND SIFTING MACHINES

Spain (IRATRA)

Test sieves UNE 7050

624.1/.131 EARTHWORK, FOUNDATIONS, ETC

Czechoslovakia (CSN)

Excavators. Terminology CSN 277003

625.2 RAILWAY ROLLING STOCK

France (AFNOR)

5 standards for different types of signal-holding brackets NF F 14-001/4,-401

Germany (DNA)

Steel pipe fittings DIN 5622
Tolerances for railway car building DIN 5601 B1.3

Spain (IRATRA)

Tie links for railway rolling stock on 1-m gage track UNE 25043

United Kingdom (BSI)

Railway rolling stock material: Part 5: Copper BS 24:Part 5:1954

627 NATURAL WATERCOURSE

Germany (DNA)

Nomenclature and definitions, general DIN 4049, B1.1

628.8 HEATING, VENTILATING, AIR CONDITIONING

Switzerland (SNV)

Air conditioning of normal air SNV 53510

628.9 ILLUMINATION

Netherlands (HCNN)

Daylight for dwellings V 1069

629.113 MOTOR VEHICLES IN GENERAL

Czechoslovakia (CSN)

Fuel tank and radiator filler neck and cap CSN 300810/2
4 standards for lever positions in different types of gear shifts CSN 303020/3
Motorcycle brake bands CSN 303422
5 standards for hydraulic brakes CSN 303501; -303512; -303515; -303517; -303527
10 standards for pneumatic and hydraulic breaking systems on trucks and their trailers CSN 303553/5; -30358/9; -304455; -307001; -307010; -307050/1
2 standards for hydraulic shock absorbers CSN 303630; -303640
Signal horn CSN 304604
6 standards for ignition spark screening CSN 304770/1; -304780/3

645.49 LADDERS

Australia (SAA)

Roof tilers' ladders SAA Int. 328, March, 1954

Germany (DNA)

Wooden step ladders and ladders, etc DIN 6565

655 PRINTING, PUBLISHING

Germany (DNA)

Typesetter's rack DIN 16501
3 standards for principal dimensions of types, spaces, and engraved cuts DIN 16505, DIN 16507, DIN 16522

Poland (PKN)

Layout of Polish type case PN N-95009

Portugal (IGPAI)

Layout of magazines, size A4 NP-26

661 CHEMICAL PRODUCTS IN THE NARROWER SENSE

Czechoslovakia (CSN)

13 standards for different inorganic chemicals such as nitric acid, muriatic acid, cyanide of potassium, caustic soda, etc CSN 65 1153, -1201, -1205, -1413/5, -1763, -2515, -2650, -3110, -3115/6, -3130
7 standards for different organic chemicals, such as acetone, acetic acid, carbon disulfide, etc CSN 65 4427, -66 1451, -2212, -1474/5, -2210, -68 6310
19 standards for different reagents CSN 68 4340/1, -4420, -4422, -4460, -4475, -4743, -5402, -5440, -5551, -6545/7, -6662/3, -6922, -6926, -6927/8

India (ISI)

Industrial benzole, grade 2 IS 358
Industrial xylole, solvent grade IS 359
Industrial amyl alcohol, solvent grade IS 360
Industrial butyl alcohol, solvent grade IS 361
Oxalic acid, technical IS 501

662.7 THERMALLY OR CHEMICALLY PRODUCED FUELS

Austria (ONA)

Propan, propylen, butan, general characteristics ONORM M 7430

India (ISI)

Dissolved acetylene gas IS 308
Hard coke IS 439

662.75 LIQUID FUEL

Czechoslovakia (CSN)

8 standards for different motor fuels and their testing CSN 65 6171/8

Germany (DNA)

Testing of liquid fuel DIN 51763

Israel (SII)

Gasoil for high speed engines SI 107
Fuel oils SI 116

663.97 TOBACCO

Czechoslovakia (CSN)

17 standards for tobacco and its products CSN 569509; -569520/1; -569525/31; -95539/40; -569560; -569575; -569590; -959516

664.3 EDIBLE FATS AND OILS

Czechoslovakia (CSN)

Margarine CSN 580250

664.7 FLOUR MILLING

Czechoslovakia (CSN)

Flour mills CSN 520011

664.8/.9 PRESERVATION OF FOODSTUFFS

Czechoslovakia (CSN)

17 standards for different kinds of sausages, bologna, ham, etc, see series CSN 577

665 OILS. FATS. WAXES

Spain (IRATRA)

7 standards for different methods of testing fats UNE 30304/5; -30308/9; -30313/5

665.3 VEGETABLES OILS, FATS, AND WAXES

Netherlands (HCNN)

Dehydrated castor oil and standoil from dehydrated castor oil V 1253

665.5 PROCESSING OF MINERAL OILS

Czechoslovakia (CSN)

Method of sampling CSN 65 70009
2 standards for methods for test of melting point CSN 65 7011/2

France (AFNOR)

Determination of gum content in volatile fuels NF M 07-004

666 GLASS AND CERAMIC INDUSTRY

Czechoslovakia (CSN)

4 standards for bottles for different purposes CSN 70 4810, -4840, -4850, -4891

Sheet glass, safety — CSN 70 9031
Sheet glass, safety, tempered — CSN 70 9082
Optical safety glass — CSN 70 9083
19 standards for different refractory products — CSN 72 6101/19
Prefabricated building components of reinforced concrete — CSN 72 3101

Germany (DNA)

Water bottle with inner threaded neck — DIN 5092
Different forms of bottle necks — DIN 6094, B1.3/6
Testing of glass for temperature-change resistance — DIN 52325
Form of bottle necks — DIN 6094, B1.2

India (ISI)

Glass making sand — IS 488

Spain (IRATRA)

Safety glass. General — UNE 43008
Plain glass. Definitions. Terminology — UNE 43015
Safety glass. Definitions. Terminology — UNE 43016
Bottle neck for crown-cap closing — UNE 43040

United Kingdom (BSI)

Safety glass for land transport — BS 857:1954

666.7 REFRACTORY PRODUCTS

India (ISI)

Sampling and testing refractory products — IS 485

Poland (PKN)

Compression test of refractory material — PN H-04179

666.9 CONCRETE, LIME CEMENT

India (ISI)

Code of practice for plain and reinforced concrete for general building constructions — IS 456

667 DYEING AND BLEACHING INDUSTRY

Germany (DNA)

28 standards for different methods of colorfastness tests for textile dyeings and prints — DIN 53949/53976

Note: These standards cover the same tests as those of Switzerland and France and those which are currently studied by the ISO/TC 38/SC 1, the Secretariat of which is shared by the USA with UK.

667.4/.5 INKS. BLACK LEAD. CHALK

South Africa (SABS)

Standard specifications for 4- and
Standard specifications for 4- and 3-color letterpress process printing inks — SABS 253-1952

668.1 SOAP INDUSTRY

New Zealand (NZSS)

Standard specification for soaps — NZSS 803, May, 1953

668.3 ADHESIVES, GLUES, GELATINS

Germany (DNA)

Testing of glue for footwear soles — DIN 53273/4
Testing of glue for wood — DIN 53253

668.5 ESSENTIAL OILS

Israel (SII)

Essential orange oil — SI 111

India (ISI)

Oil of eucalyptus — IS 328
CSN 02 0050/51,

669 METALURGY

France (AFNOR)

Chemical analysis of aluminum and its alloys: copper and zinc content — NF A 06-572/73
Chemical analysis of zinc alloys for die casting: spectographic method for determination of tin content — NF A 06-605
Chemical analysis of zinc alloys for die casting: polarographic method for determination of cadmium content — NF A 06-606
Chemical analysis of type metal — NF A 06-608
4 standards for chemical analysis of alumium and aluminum alloys:
Titanium content — NF A 06-574
Nickel content — NF A 06-575
Manganese content — NF A 06-576
Cobalt content by colorimetric method — NF A 06-577

Germany (DNA)

Pure aluminum — DIN 1712 B1.4
Zinc-red brass bronze castings — DIN 1705
Brass casting — DIN 1709
Aluminum bronze castings — DIN 1714
Lead-zinc bronze castings — DIN 1716
Pure aluminum pipes — DIN 1789
Pure aluminum bars — DIN 1790
Pure aluminum cold-rolled sheets up to 5 mm thick — DIN 1753
Pure alumium cold-rolled strips — DIN 1793
Pure and alloyed aluminum flat bars — DIN 1769/70
Rules for testing soundness of metals with X-rays and gamma rays — DIN 54110
Hot-rolled spring steel strips — DIN 4620
Magnetic sheets for repeater coils — DIN 41301
Pure aluminum sheets and bands — DIN 1788
Round bars of pure and alloy aluminum — DIN 1798

India (ISI)

Cast aluminum for utensils — IS 20
Wrought aluminum for utensils — IS 21
Aluminum-coated high-tensile aluminum alloy sheets and coils for aircraft — IS 30
Specification for tensile testing of metals — IS 497
Testing weight and uniformity of coating on galvanized iron and steel wires and sheets — IS:429
Malleable iron castings — IS:227
Expanded metal (steel) for general purpose — IS:412
Alloy austenitic manganese steel castings — IS:503
Chemical analysis of aluminum and its alloys — IS:504
Steel sheets, special quality — IS:513

Italy (UNI)

3 grades of silver, specification — UNI 3350
Copper scrap, classification — UNI 3398
Brass scrap, classification — UNI 3399
Bronze scrap, classification — UNI 3400

Japan (JISC)

General rule for test and inspection of non-ferrous metals — JIS H 0321*

Spain (IRATRA)

Tool steel — UNE 36070/71
Zinc strips, rolled — UNE 37304
Light aluminum alloys for forging — UNE 38300
4 standards for different aluminum-copper-manganese alloys — UNE 38311/15
Flexure test of metals by impact method — UNE 7056
Determination of lead content in copper alloys — UNE 7076
Quantitative analysis of alloy called "cuzin" for copper, iron and zinc content — UNE 7077/79
Steel bars for firebox grating — UNE 36557
Aluminum-copper-nickel alloy — UNE 38316/17
Aluminum-manganese alloy — UNE 38331

Sweden (SIS)

General technical provisions for the delivery and control of metallic products (English text) — SIS 11 00 01 E

United Kingdom (BSI)

Glossary of terms relating to iron and steel: Part 1 General metallurgical, heat treatment and testing terms — BS 2094:Part 1:1954
Part 3 Hot rolled steel products (excluding sheet, strip and tubes) — BS 2094:Part 3:1954
Part 4 Steel sheet and strip — BS 2094:Part 4:1954
Methods for the determination of magnetic permeability of iron and steel bars, forgings and castings — BS 2454:1954
Aluminum fixing accessories for building purposes — BS 2465:1954
Glossary of terms relating to iron and steel: Part 2: Steelmaking — BS 2094:Part 2:1954
Methods for the analysis of iron and steel:
Part 13: Chromium in iron and steel — BS 1121:Part 13:1954
Part 30: Cobalt in iron and steel (absorptiometric method) — BS 1121:Part 30:1954
Part 31: Silica in blast furnace slag — BS 1121:Part 31:1954
Glossary of terms relating to iron and steel:
Part 6: Forgings and drop forgings — BS 2094:Part 6:1954

672 ARTICLES OF IRON AND STEEL

Germany (DNA)

Tin cans for floor polish — DIN 2022
Cans and pails for packing honey — DIN 2009, B1.1/2

Spain (IRATRA)

Calibrated chains of different sizes — UNE 18021

672.6 CHAINS, ANCHORS

Germany (DNA)

Roller chains for hoisting apparatus — DIN 8184
Round link chains for hoisting apparatus — DIN 5684

674 WOOD INDUSTRY

Australia (SAA)

Protein adhesives for plywood — AS K.89-1953
Plywood for general purposes — AS 0.6-1953
Nomenclature for commercial timbers imported into Australia — SAA Int. 363, May, 1954

Canada (CSA)

Specification for Douglas fir plywood and western softwood construction plywood — CSA 0121-1954

Czechoslovakia (CSN)

11 standards for different commercial sizes of lumber — CSN 49 1010, -1030/3, -1109, -1111/2, -1208/10

France (AFNOR)

19 standards for wooden handles for different hand tools and agricultural implements — NF B 54-500/517, B 54-521/2
Wooden crates for apple shipment — NF H 21-017

Germany (DNA)

2 standards for testing strength of glued joints — DIN 53251, -53254
7 standards for different types of carpenter's planes — DIN 5150, -7218/20, -7310/2

RECENT PUBLICATIONS RECEIVED FROM ASA MEMBERS

American Society for Testing Materials

(1916 Race Street, Philadelphia 3, Pa.)

• **ASTM Specifications for Steel Piping Materials.** April 1954. 370 pp. $3.75

The 1954 edition of this compilation, sponsored by ASTM Committee A-1 on Steel, contains in their latest approved form the 53 ASTM specifications for carbon-steel and alloy-steel pipe and tubing, including stainless.

Materials covered include pipe used to convey liquids, vapors, and gases at normal and elevated temperatures; boiler, superheater, and miscellaneous tubes; still tubes for refinery service; heat-exchanger and condenser tubes. Also included are specifications for materials used in pipe and related installations: castings; forging and welding fittings; bolts and nuts. The ASTM standard classification of austenite grain size in steels (E19) with two sets of charts, as well as the American Standards covering wrought steel and wrought iron pipe (B36.10) and stainless steel pipe (B36.19) are also a part of the book.

• **ASTM Standards on Adhesives.** September 1954. 216 pp. 6 x 9. $1.75

Sponsored by ASTM Committee 4-14 on Adhesives, this book brings together all of the ASTM test methods, definitions, specifications, and recommended practices pertaining to adhesives. In addition to the test methods developed by Committee D-14, related standards have been included in the book as prepared by seven other committees of the American Society for Testing Materials.

Standards include adhesives, rubber cements, brake shoe adhesives and vulcanized rubber, and electrical insulation.

• **ASTM Standards on Coal and Coke.** 1954. 164 pp. 6 x 9. $2.25

Twenty-seven methods of test, definitions, and specifications for coal and coke and the standard specification for the classification of coal according to rank and grade are included in the 1954 edition of this publication.

The standards have been prepared by ASTM Committee D-5 on Coal and Coke.

Some of the standards contained in the compilation also have been approved as American Standard by the American Standards Association.

• **Tentative Specifications for Copper and Copper-Alloy Welding Electrodes.** (ASTM B225; AWS A5.6), April, 1954, 11 pp. 25 cents.

Issued jointly by ASTM and the American Welding Society, the new edition of this specification was prepared primarily to standardize the electrodes used in inert-gas metal-arc welding, which is daily gaining wider use in the copper field.

The filler metals covered include copper; copper-silicon (silicon bronze); copper-tin (phosphor bronze); copper-nickel; and aluminum bronze.

American Welding Society

(33 West 39th Street, New York 18, N.Y.)

• **Tentative Specifications for Nickel and Nickel-Base Alloy Covered Welding Electrodes.** ASTM B295-54T; AWS A5.11-54T. 1954. 12 pp. 25 cents

Issued jointly by the American Welding Society and the American Society for Testing Materials, these new specifications cover electrodes for welding nickel and nickel-base alloys individually to themselves and also for welding these materials to steel. Also included are filler metals for welding the clad side of nickel-base alloy clad steels.

Twelve classifications of filler metal are established by these specifications, including all the commonly used materials.

An Appendix contains information on the use of each classification for joining different base metals with the shielded metal-arc welding process.

National Fire Protection Association

60 Batterymarch Street, Boston 10, Mass.

• **National Fire Codes.** 1954. Six volumes. $6.00 per volume.

First issued in 1938, the National Fire Codes have been periodically revised and expanded. All 162 standards in the latest edition have been completely revised as of July 30, 1954. Also, the Codes have been enlarged to six volumes for the first time with the addition of the new Transportation volume (No. VI) containing fire safety standards for air, marine, and highway transportation. Fields covered by the other five volumes are: Vol I, Flammable Liquids and Gases; Vol II, Combustible Solids, Dusts, Chemicals, and Explosives; Vol III, Building Construction and Equipment; Vol IV, Extinguishing Equipment; Vol V, National Electrical Code and other electrical standards.

The Codes and the NFPA Standards they contain are intended to provide reasonable safety to life and property. They are purely advisory as far as the National Fire Protection Association is concerned, but are widely used as a basis of good practice by property owners and others, and for legal and insurance purposes in the United States, Canada, and other countries.

• **Standards for the Construction and Protection of Piers and Wharves** (NFPA Standard No. 87), May, 1954. 35 cents.

These standards are a guide to good practice in dealing with the fire problems of this class of property which, for many years, has suffered an average loss per fire greater than in any other class.

Association of Casualty & Surety Companies

60 John Street, New York 38, N. Y.

• **Handbook of Industrial Safety Standards** (ninth edition, 315 pp, August, 1954). $1.40.

This completely revised edition of the handbook is a concise but comprehensive compilation of industrial safety requirements recommended by nationally recognized authorities including the American Standards Association, the National Fire Protection Association, the American Society of Mechanical Engineers, and various governmental organizations.

Underwriters' Laboratories, Inc

(207 E. Ohio Street, Chicago 11, Illinois)

• **Aluminum Building Wires and Connectors.** Bulletin of Research No. 48. September, 1954. 45 pp. No charge

This bulletin reports an investigation conducted by Underwriters' Laboratories, Inc to obtain information on building wires employing aluminum instead of copper as the electrical conductor, and on solders and pressure wire conductors when used for making the joints in such conductors.

Among the phases of the problem covered are installation in conduit, breaking load, flexibility, soldering, joint compounds, corrosion, heating, short circuits, assembly, secureness, pullout, preparation of joints, and interstrand resistance.

AMERICAN STANDARDS

Status as of December 3, 1954

Arbitration

In Standards Council —

Commercial Arbitration, Z73
Sponsor: American Arbitration Association

Building

In Standards Council —

National Plumbing Code, A40.8
Sponsors: The American Public Health Association; The American Society of Mechanical Engineers

In Standards Board —

Gypsum Plastering, Specifications for, A42.1 (Revision of A42.1-1950)

Interior Lathing and Furring, Specifications for, A42.4 (Revision of A42.4-1950)
Sponsors: American Institute of Architects; American Society for Testing Materials

Building Code Requirements for Minimum Design Loads in Buildings and Other Structures, A58.1 (Revision of A58.1-1945)
Sponsor: National Bureau of Standards

Building Code Requirements for Reinforced Gypsum Concrete, A59.1 (Revision of A59.1-1945)
Sponsor: The Building Officials Conference; The Gypsum Association

Gypsum Wallboard, Specifications for, ASTM C36; ASA A69.1 (Revision of ASTM C36-52; ASA A69.1-1952)
Sponsor: American Society for Testing Materials

Standard Types of Building Construction, NFPA 220; ASA A110
Sponsor: National Fire Protection Association

Withdrawal Being Considered —

Plumbing Code, A40.7-1949
Sponsors: American Public Health Association; American Society of Mechanical Engineers

NOTE: With approval of the National Plumbing Code, A40.8, this standard will be withdrawn.

Consumer

In Standards Board —

Sampling and Chemical Analysis of Alkaline Detergents, Method of, ASTM D501; ASA K60.21 (Revision of ASTM D501-49; ASA K60.21-1950)

Standards Submitted —

Computing Food-Storage Volume and Shelf Area of Automatic Household Refrigerators, Method of, B38.1 (Revision of B38.1-1944)

Rating and Testing Home Freezers, Method of, B38.3

Drawings and Symbols

American Standard Published —

Letter Symbols for Aeronautical Sciences, Y10.7-1954 (Revision of Z10.7-1950) $1.25
Sponsor: American Society of Mechanical Engineers

Electrical

American Standards Published —

Miniature Incandescent Lamps, C78.140-1954 (Revision of C78.140-1953) $0.25
Sponsor: Electrical Standards Board
Covers miniature incandescent lamps giving trade number, rated Cp, bulb, base, filament type, design volts, amperes, light center length, and maximum over-all length

Nomenclature for Glass Bulbs Intended for Use with Electron Tubes and Electric Lamps, C79.1-1954 (Revision of C79.1-1948) $0.50

Nomenclature for Molded Glass Flares Intended for Use with Electron Tubes and Electric Lamps, C79.2-1954 (Revision of C79.2-1948) $0.35
Sponsor: Electrical Standards Board

American Standards Approved —

Recommended Practice for Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Revision of C16.5-1942)
Sponsor: Institute of Radio Engineers

Power-Operated Radio Receiving Appliances, C65.1-1954 (Revision of C65.1-1952)
Sponsor: Underwriters' Laboratories, Inc

In Standards Board —

Measurement of Aspect Ratio and Geometric Distortion of Television Cameras and Picture Monitors, Methods of, C16.23

Terms for Audio Techniques, Definitions of, C16.24
Sponsor: Institute of Radio Engineers

Switchgear Assemblies and Metal-Enclosed Bus, C37.20

Polyphase Induction Motors and Generators, Test Code for, C50.20
Sponsor: Electrical Standards Board

Terms of Electron Tubes, Definitions of, C60.9

Terms of Magnetrons, Definitions of, C60.10

Gas Filled Radiation Counter Tubes, Methods of Testing, C60.11

Terms of Gas Filled Radiation Counter Tubes, Definitions of, C60.12

Measuring Noise in Electron Devices, Methods of, C60.13
Sponsor: Joint Electron Tube Engineering Council

Standard Submitted —

Terms in the Field of Linear Varying Parameter and Nonlinear Circuits, Definitions of
Submitted by: Institute of Radio Engineers

Project Being Considered —

Terminology for Automatic Controls, C85
Sponsor: Electrical Standards Board

Gas Burning Appliances

American Standard Approved —

Installation of Gas Piping and Gas Appliances in Buildings (Not Applicable to Undiluted Liquefied Petroleum Gas), Z21.30-1954 (Revision of Z21.30-1950)

Mechanical

American Standards Approved —

Letter Symbols for Gear Engineering, B6.5-1954 (Revision of B6.5-1949)

Gear Nomenclature (Terms, Definitions, and Illustrations), B6.10-1954 (Revision of B6.10-1950)
Sponsors: American Gear Manufacturers Association; American Society of Mechanical Engineers

In Board of Review —

Nomenclature for Gear Tooth Wear and Failure, B6.12

In Standards Board —

Square and Hexagon Bolts and Nuts, B18.2 (Revision of B18.2-1952)

Surface Roughness, Waviness, and Lay, B46.1 (Revision of B46.1-1947)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Withdrawals Being Considered —

Code for Design of Transmission Shafting, B17c-1927 R1947

Woodruff Keys, Keyslots, and Cutters, B17f-1930 R1947

Shafting and Stock Keys, B17.1-1943

Rotary Cone Valves, B61
Requested by: American Society of Mechanical Engineers

Mining

In Standards Board —

Quarry Safety Code, M28.1
Sponsor: National Safety Council

Office Equipment

In Board of Review —

Reflectances of Furniture for General Office Use, X2.1.3
Sponsor: National Office Management Association

Paints and Varnishes

Reaffirmation Being Considered —

Test for Specific Gravity of Pigments, Methods of, ASTM D153-52T; ASA K41 (Revision of ASTM D153-52T; ASA K41-1953)
Sponsor: American Society for Testing Materials

Petroleum Products and Lubricants

In Standards Board —

Test for Distillation of Gasoline, Naptha, Kerosene, and Similar Petroleum Products, Method of, ASTM D86-54; ASA Z11.10 (Revision of ASTM D86-53; ASA Z11.10-1953)

Test for Distillation of Natural Gasoline, Method of, ASTM D126-54; ASA Z11.11 (Revision of ASTM D216-53; ASA Z11.11-1953)

Test for Distillation of Gas Oil and Similar Distillate Fuel Oils, Method of, ASTM D158-54; ASA Z11.26 (Revision of ASTM D158-53; ASA Z11.26-1953)

Test for API Gravity of Petroleum and Its Products, (Method of Hydrometer Method), ASTM D287-54; ASA Z11.31 (Revision of ASTM D287-52; ASA Z11.31-1952)

Test for Distillation of Crude Petroleum, Method of, ASTM D285-54T; ASA Z11.32 (Revision of ASTM D285-52; ASA Z11.32-1952)

Test for Neutrilization Value (Acid and Base Numbers) by Potentiometric Titration, Method of, ASTM D664-54; ASA Z11.59 (Revision of ASTM D664-52; ASA Z11.59-1952)

Test for Saponification Number of Petroleum Products by Potentiometric Titration, (Revision of ASTM D939-52; ASA Z11.67-1952)

Method of, ASTM D939-54; ASA Z11.67

Test for Specific Gravity of Petroleum and Its Products (Hydrometer Method), Method of, ASTM D1298-54; ASA Z11.84

Sponsor: American Society for Testing Materials

Photography

In Standards Board —

Dimensions for 70mm Perforated Film for Cameras Other Than Motion-Picture Cameras, PH1.20

Focal Length of Lenses: Markings, PH3.13 (Revision of Z38.4.4-1942)

Standards Submitted —

16mm Sound-Focusing Test Film, PH22.42

16mm 400-Cycle Signal-Level Test Film, PH22.45

16mm Buzz-Track Test Film, PH22.57

16mm Motion-Picture Projector for Use with Monochrome Television Film Chains Operating on Full Storage Basis, PH22.91

35mm Magnetic Azimuth Test Film, PH22.99

Sponsor: Society of Motion Picture and Television Engineers

Reaffirmation Requested —

Printer Aperture Dimensions for Contact Printing 16mm Reversal and Color Reversal Duplicate Prints, PH22.49

Requested by: Society of Motion Picture and Television Engineers

Pipe and Fittings

Project Requested —

Plastic Pipe

Requested by: Chemical Industry Advisory Board

Radio

American Standard Published —

Definitions of Terms on Antennas and Waveguides, C16.21-1954 $0.75

Sponsor: Institute of Radio Engineers

Rubber Industry

In Standards Board —

Sample Preparation for Physical Testing of Rubber Products, Method of, ASTM D15-52T; ASA J1.1 (Revision of ASTM D15-52T; ASA J.1-1953)

Sponsor: American Society for Testing Materials

Safety

American Standards Approved

Safety Code for Controls and Signaling Devices for Graphic Arts Presses, B65.1-1954

Sponsors: Research and Engineering Council of the Graphic Arts Industry, Inc; National Safety Council

Safety Code for Woodworking Machinery, O1.1-1954 (Revision of O1.1-1944)

Sponsors: Association of Casualty and Surety Companies (Accident Prevention Department); International Association of Government Labor Officials

In Standards Board —

Recording and Measuring Work Injury Experience, Method of, Z16.1 (Revision of Z16.1-1945)

Sponsors: Association of Casualty and Surety Companies (Accident Prevention Department); National Safety Council

WHAT'S NEW ON AMERICAN STANDARD PROJECTS

Plumbing Code, A40 —

Sponsor: The American Society of Mechanical Engineers; American Public Health Association

The Proposed American Standard National Plumbing Code was sent to letter ballot of Standards Council by a decision of the Council at its meeting November 17. The Council recommended approval of the Code. Objections by a number of the groups concerned were taken up at the meeting. The Council decided that the opinions of the groups with a substantial interest in the subject had been considered in developing the code and that it was to the best interest of all for the proposed American Standard National Plumbing Code to be approved now and made available. American Standards are always subject to revision, it was pointed out. The Council, therefore, instructed the sponsors to organize a sectional committee as soon as possible to proceed with any revision that may be needed.

Installation of Ceramic Tile —

Sponsor: Tile Council of America

The scope of this recently initiated new project will cover "Method for the installation of quarry tile for roof decks, ceramic mosaic on ceilings and floors, glazed ceramic tile on walls, tile on counter tops and glazed non-vitreous tile on floors."

Coordination of Dimensions of Building Material and Equipment, A62 —

Sponsors: American Institute of Architects; the Producers Council; Associated General Contractors of America; National Association of Home Builders

A proposed standard providing modular sizes of kitchen equipment has been completed and is now being voted on by Sectional Committee A62.

Brick made in accordance with modular sizes is now offered by manufacturers in 38 states, reports the Secretary for Modular Coordination, in a recent issue of *Modular Grid Lines*. Most recent information, the secretary reports, is that most brick manufacturers in Colorado, Kansas, and western Missouri now furnish non-Modular brick only on special order.

A uniform general note identifying Modular working drawings and recommended by ASA Committee A62 has been made into a *Stanpat* for direct, permanent application to tracing paper. *Stanpat* is the trade name for a translucent sheet of thin material upon which any text or drawings may be printed. It is faced with a special pressure-adhesive. Numerous drafting rooms now use *Stanpats* to save drafting time for items that would otherwise have to be put on working drawings repeatedly, such as title blocks, general notes, key plans, and similar data.

A62's Study Committee No. 18 on Light Frame Construction held its first meeting in Cleveland. Len Haeger, Research Director of the National Association of Home Builders,

is chairman. Among the first questions to be studied will be stock stud lengths.

Three individuals who have given outstanding service to the work on modular coordination — or Modular Method, as it is now called — received awards during the National Conference on Standards (see the January 1955 issue for details).

Apparatus Bushing Standardization, C76 —

Sponsor: Electrical Standards Board

A sectional committee is now being organized to consider revising the out-of-date American Standard Apparatus Bushings and Test Code for Apparatus Bushings, C76.1-1943. This standard was AIEE standard 21-1942, and the Joint Committee on Bushing Standardization of the American Institute of Electrical Engineers was the working group assigned responsibility for work on the standard. Since approval of the 1943 American Standard, the AIEE committee has gone out of existence. Now that further work is needed in the field, the Electrical Standards Board has approved organization of a sectional committee with representation from all groups substantially concerned. Organizations have been invited to appoint their representatives, and an organizational meeting will be held within the next couple of months.

In the meantime, a joint working group consisting of members of both ASA Sectional Committee on Power Switchgear, C37, and ASA Sectional Committee on Transformers, Regulators, and Reactors, C57, has prepared a standard on Electrical and Mechanical Characteristics of Apparatus Bushings. Both committees have been anxious to have this information available as part of their families of American Standards. The standard developed by this working group has now been approved as a supplement both to the American Standard Alternating-Current Power Circuit Breakers, C37.4-1953, and to the American Standard on Distribution, Power, and Regulating Transformers, and Reactors other than Current-Limiting Reactors, C57.12-1949. Since the material in this standard applies both to American Standard C37.4-1953 and to American Standard C57.12-1949, the new document has been numbered both C37.4a-1954 and C57.12b-1954. When the new sectional committee C76 is organized it will incorporate this single-sheet document into its revision of American Standard C76.1-1943.

Terminology Standards Available

In addition to the Proposed American Standard Shock and Vibration Terminology, Z24.1a, which is now published for trial use (see page 384), a number of American Standards on definitions and terminology have been made available within the past month. These are: American Standard Definitions of Terms on Antennas and Waveguides, C16.21-1954 (sponsor, Institute of Radio Engineers); American Standard Nomenclature for Molded Glass Flares Intended for Use with Electron Tubes and Electric Lamps, C79.2-1954 (sponsor, Electrical Standards Board); American Standard Nomenclature for Glass Bulbs Intended for Use with Electron Tubes and Electric Lamps, C79.1-1954 (sponsor, Electrical Standards Board).

Terminology for Automatic Controls, C85 —

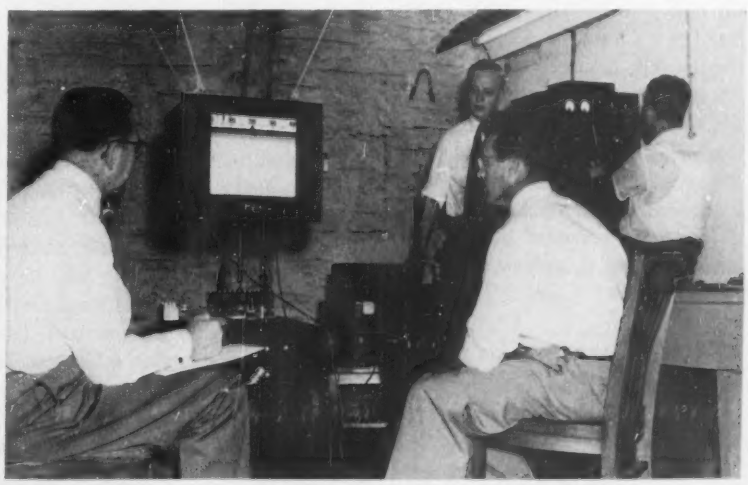
Sponsor: The American Society of Mechanical Engineers

The first meeting of this new sectional committee is cheduled for January 5, 1955, at which time the organization of the committee will be completed and the scope of work considered. The scope proposed by a General Conference that recommended the new project covers: "Terminology pertaining to automatic process control, feedback control, regulating and related systems not requiring human intervention as part of the regulating procedure."

TESTS ARE BASIS FOR INSTRUMENT STANDARDS

Vibration and acceleration tests of recording instruments were recently carried out at the Electrical Testing Laboratories in connection with work on standards for automatic null-balancing electrical recording instruments. This work is being done by a working group of Sectional Committee C39 on Electrical Measuring Instruments.

Observing an instrument under test on one of ETL's new vibration machines (below) are, left to right, Donald McKinlay, Bristol Company; Herman C. Koenig, Manager of ETL's Electrical Department and Chairman of ASA Committee C39; C. A. Blakeslie, Bristol Company; and Norman Lieberman, ETL technician operating the control panel.



APPEL PROMOTED BY NATIONAL BUREAU OF STANDARDS

• • **William D. Appel, chairman of ASA Sectional Committee L23 on International Standardization of Textiles,** has been named Assistant Chief of the Organic and Fibrous Materials Division of the National Bureau of Standards. Mr Appel also is continuing as Chief of the NBS Textiles Section. He was recently named to receive the Olney Medal, the highest award of the American Association of Textile Chemists and Colorists. Mr Appel is chairman of Committee D-13 on Textile Materials of the American Society for Testing Materials. He was one of the USA delegates to the June meetings of the International Organization for Standardization Technical Committee 38 on Textiles in England. Subject of the conference was Colorfastness and Shrinkage. Representatives of 14 countries attended the meetings, 25 test methods were given final approval, and 10 others were tentatively approved.

WHAT IS YOUR QUESTION ?

Can pipe flanges made to American Standards be used interchangeably with those made in accordance with Canadian Standards?

There is one important point of difference between the Canadian Standard, B109-1951, which is a specification for marine valves and fittings, and the American Standards for cast-iron flanges and fittings, B16b, B16b1, B16b2, and B16.1; for steel flanges and fittings, B16.5; and for brass or bronze flanges and fittings, B16.24. This is the single point of bolt hole clearance. The Canadian Standard calls for a clearance of 1/16 inch over the bolt diameter whereas the American Standards call for a clearance of ⅛ inch over the bolt diameter. In actual installation, the Canadian and American flanges bolt together, but Canadian flanges cannot be supplied by a manufacturer when American Standard flanges are specified, and vice versa. Manufacturers in each country, therefore, must make the flanges special to meet the standard of the other country. Work is under way to unify these standards.

Is there a standard color code for steel bars?

This subject of color marking for identification of metals is now before the Company Member Conference for study. A study committee is being organized with J. R. Walgren of the Aluminum Company of America as chairman and with representatives from the interested groups as members. Its findings as to the possibilities for national standards in this field and recommendations as to whether or not work should be undertaken to develop a standard will be referred to the Mechanical Standards Board of the American Standards Association.

The problem of color marking of metals has come up from time to time over a number of years, and there are still differences of opinion as to whether it is practical to use such a system on a national scale.

Are there safety standards for oxyacetelyne or arc welding of mobile tanks used for transporting flammable liquids?

American Standard Safety in Electric and Gas Welding and Cutting Operations, Z49.1-1950, is concerned with the general safety of employees doing a welding job. Paragraph 6.3 deals specifically with welding or cutting of containers. This section also contains references to additional publications concerning the cleaning and gas-freeing of tanks which may have contained flammable materials.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

THE MAGAZINE OF STANDARDS published monthly at New York, N. Y., for October 1, 1954.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

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2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

RUTH E. MASON.

Sworn to and subscribed before me this 24th day of September, 1954.

LYDIA I. GUSTAFSSON.
(Seal) (My commission expires March 30, 1955.)

LYDIA I. GUSTAFSSON,
Notary Public, State of New York.
Qualified in Bronx County,
No. 03-1608150.
Cert. filed with County Clerk N. Y. Co
Commission Expires March 30, 1955.

ASA's Policy on Reproduction of Copyrighted Material

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Gokhale Heads SES

Madhu S. Gokhale, RCA Victor Division, Camden, New Jersey, is the new president of the Standards Engineers Society, succeeding W. L. Healy, General Electric Company, Philadelphia. Mr Gokhale takes office January 1, 1955.

Herbert G. Arlt, Bell Telephone Laboratories, Murray Hill, N.J., who has served as chairman of the New York Section of the Society, has been elected vice-president.

Victor S. Gittens, Philco Corporation, Philadelphia, formerly chairman of the Society's Metropolitan Philadelphia Section, is the new treasurer. C. W. Bowler, Leeds & Northrup Company, Philadelphia, will serve as secretary.

STANDARDS OUTLOOK

by LEO B. MOORE

METHOD OF OPERATION

The typical standards engineer is a hard-working individual. He wrestles at great length with one project or assignment, sometimes in a vacuum of uncertainty, until the answer is found. At times he may be required to do the whole job again in order to obtain final approval of his work.

How should a standards engineer work most effectively in terms of the final results and their acceptance?

The normal decision is to go it alone as an "expert." The standards man is hired to produce standards. That is his job. And for the standards man the easiest method of operation is indeed to "go it alone." For his boss, it is the most productive method in terms of output, because he has a competent individual moving quickly and unencumbered into standards work that may be listed as specific accomplishments for his department.

The prime objection to the "expert" approach is the difficulty of gaining and maintaining acceptance of the standard. Plainly, no one man can consistently produce standards that all concerned will admire and abide by.

Although most companies tend to have their standards engineers operate mainly as "experts," there is a distinct minority that abhor the process and insist on the "committee" approach. A top committee may establish standards policy and determine such detail as the scope and extent of the work of the standards department. Additional committees will be charged with the responsibility for standards projects and will meet to produce the desired standards. The standards man assigned to the committee may be its secretary and perform tasks involving the procurement of information and data for the consideration of the committee. For the company, the committee approach overcomes very effectively the problem of acceptance because the men who are concerned with the standard and its use have been intimately involved in its preparation. The committee approach tends to build a company team.

The prime objection to the use of the committee is the slowness of its decision-making process. The members of the committee have specific responsibilities that are their normal and continuing concern. The standards work must become secondary, if not in interest, at least in time devoted to it. The adjudication of a single man's objection while a full committee sits waiting for his acceptance of a point or an idea tends to interfere with the continuing enthusiasm of the group.

Several companies sensitive to the advantages and the concurrent objections to these two methods of operation of the standard-producing process have taken what seems to be the logical middle ground — the use of both where each is advisable. The standards engineer works on his project until he reaches the point where he feels others can help. The committee may be an informal group gathered together to exchange points of view or an executive group empowered to make decisions. The choice is a matter of circumstance and need but is designed to speed up the work of the individual and to facilitate collective action of the group. It saves time and effort. It works.

●

Mr Moore is Assistant Professor of Industrial Management at the Massachusetts Institute of Technology where he teaches a full-term course in industrial standardization.

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